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***CONVERSION OF MILITARY INDUSTRY TO
CIVILIAN PRODUCTION IN THE USSR***

Final Report

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Summary

The conversion of military industry started in 1988 as a policy of the central government. It was intended to preserve as much as possible of the military industrial complex, especially its R&D establishment, skilled workforce, and managerial superstructure. From the military point of view this conversion was easily reversible; from the economic point of view it was wasteful.

In 1990, the republics started to claim jurisdiction over the military plants on their territory. At the same time, economic decline threatened the performance of the military sector. We suggested that the republics' governments and an economic collapse will be much less favorable towards the interests of the military industrial complex than the central government. Their combined impact would be much more profound and harder to reverse than that of any conversion program. Carving up military industry among the republics is the most effective way of dismantling it.

Dividing military industry among the republics fragments their hitherto unified sector. The chances of reestablishing effective interrepublican coordination for this sector are very slim. Republican governments do not think of their nations as great powers. There is no reason for them to spend resources on the military industry designed to support great power policies. In the face of the rapidly deteriorating economy, republican governments are seeking resources with which to cushion the decline in living standards. The military industry is practically the only domestic sector left that can be plundered for the sake of the consumer.

In the near future, we are likely to witness a sharp (e. g., 90%) reduction in military production and R&D within 2-3 years, coupled with a reduction in subsidies to the sector. This will be a dismantling process, rather than conversion. There will be a shutdown or conversion of whole plants, rather than parts of plants; a transfer of all civilian production from the military to civilian sector of the economy; and a transfer of plants that produce dual use products to the civilian sector, leaving only final assembly plants in the military sector. Much of the VPK administrative superstructure will be dismantled. The mothballing of the military production capacity will be kept to a minimum. Production capacities that cannot be converted to competitive civilian production will be scrapped or abandoned. Finally, we should expect a dismantling of the industrial mobilization system in the civilian sector, or at least of its costlier features (the so called second departments, restrictions on product design, etc.), and a reduction in secrecy surrounding military budgets, procurement, and production to the levels common in Western parliamentary democracies.

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OVERVIEW OF THE REPORT

The subject of this report has been changing radically during the period of study. The first three parts of the report deal with conversion before the August coup and the dissolution of the USSR. Parts I and II provide economic analysis of conversion. Part I presents the "outsider" view, with the focus on reversibility of conversion. Part II gives the "insider" prospective, with emphasis on conversion's contribution to the civilian economy. Part III analyzes the political role of the defense industry managers and their adaptation to the new environment. Part IV addresses the developments after the August, 1991 coup and projections for the near future.

PART I. CONVERSION: VIEW FROM THE OUTSIDE.

Conversion is understood in the Soviet Union in the broad sense, as transfer of resources from the military to civilian use. While this process has important economic and technological dimensions, it cannot be explained without the introduction of political and social considerations.

The process of conversion since 1988 is best understood as a series of threats to military industry, and the industry's defensive responses. These threats, in chronological order (and also in the order of increasing gravity) are:

- Pressure to increase the military industry's role in the production of consumer goods (starting in 1988);
- Cuts in military expenditures (starting in 1989);
- The prospect of market reform, the disintegration of the economy, and of the country itself (starting in 1990).

In the face of these threats, the military industry tries to preserve its organizational integrity, control over resources, and its customary ways: guaranteed centralized supplies, high wages, government-financed R&D, and familiar products. These normal signs of organizational inertia and self-preservation are of special interest to us. To the same degree that these efforts are successful, conversion will be superficial and easily reversible.

1. WHAT IS BEING CONVERTED.

1.1 The size of the military industry.

The depth of conversion can only be evaluated if the size of the military industry is known. This, and the broader issue of the share of GNP going to the military, has become a subject of internal Soviet debate.

Yet the secrecy that has been pervading this area, together with peculiar accounting rules, make it difficult to arrive at reliable number. "We've been so painstaking in covering up all the expenditures on arms and the maintenance of the military-industrial complex (MIC), that now we ourselves are having a hard time discovering the truth. That's why it is practically impossible to evaluate the potential that the MIC may have to develop exports or for supplying the domestic consumer market."¹ This opinion of one of the top Soviet economists, O. Bogomolov, is shared by an accountant stating that "the demands of the deputies of the Supreme Council to see data on military expenditures are ridiculous. We cannot figure this out for just one plant."²

Nevertheless, various experts continue to cite certain figures, using these data in the political struggle on this issue which now has penetrated all levels of social and government activity.

The position of the Soviet government officials, who tend to artificially minimize the indicators, is faced by the view support-

¹O. Bogomolov, Izvestiia, November 23, 1990.

²Zheleznov, 1990, p. 145.

ed by western and Soviet liberal specialists. This face off, as disclosed in the Soviet press, may be outlined in terms of the following data.

Just before the session of the Presidential Council of the USSR that was to deal with conversion issues, it was stated that the figures on the MIC's production capacity, about which many myths had circulated, had for the first time been "worked out and broken down". It turned out that the MIC contributed some 6.4% to the overall GNP.³ Three months prior to this statement an official from the apparatus of the Council of Ministers of the USSR, had cited a significantly higher figure of 8% of GNP, and no more than 15% of the national income.⁴

These statements contradicted the claims made by a group of scholars - Bogomolov, Tikhonov, Belkin - who had stated at the American Enterprise Institute conference in April 1990, that military needs in the USSR constituted 20-25% of the GNP, or about 200 billion rubles. In the same spirit, another source stated that "For decades the Soviet people has been told that annual allocations for defense amounted to 20.2 billion rubles. Now it is revealed to us that military expenditures in 1989 reached 77.3 billion rubles. The International Strategic Studies Institute in London cites another figure, that of 200-220 billion rubles, or not less than 43-48 percent of all expenditures (459 billion rubles) of the national budget in 1989." The article continues by citing the

³V.D. Protasov, Izvestiia, October 5, 1990,

⁴S. G. Guchmazov, Pravda, July 5, 1990

fact that in 1943 that share of military expenditures in the state budget of the USSR was equal to 52 percent and the author goes on to draw the conclusion that the USSR is now living in conditions of a war economy.⁵

Summing up the discussion, it can be said that while the official representatives of the government stick to figures of from six to eight percent of the GNP (or about 80 billion rubles) the regime's critics and western sources consistently tend to 20-25 percent of the GNP--or about 200 billion rubles. What could be the origin of such wide divergence in indicators? And one must ask if it is even possible to calculate Soviet defense spending, or is this an undeterminable category, as Bogomolov suggests?

The Soviet government bureaucracy's representatives set apart three levels of spending in the defense area: 1. The operation budget of the Ministry of Defense. 2. Expenditures on Research and development projects that are intended for military application but are carried out not on the basis of contracts with the Ministry of Defense, but paid for out of the National budget.

3. Direct and associated government spending for maintenance of capabilities in emergency conditions, including wartime conditions.

In order to justify the shifting and variation in figures cited, issues of the following type are raised: how to account for expenditures on the military training carried out in civilian educational institutions? Should the activity of DOSAAF (a Soviet association that promotes arms-training, rifle ranges and quasi-

⁵V. Pervyshin, Komsomol'skaya Pravda, January 19, 1991.

military instruction) be considered as work towards preparing young people for their military service or is it just a leisure-cultural activity?

Yet accounting nuances of a similar nature may arise when military expenditures of other states are being figured. The incompatibility between Soviet and western conditions in this regard goes far deeper.

The attempts made by the sadly infamous [Soviet] consortium ANT to trade in Soviet military hardware overseas revealed an interesting set of circumstances: a MIG-23 aircraft jet engine in the Soviet Union costs 400 thousand rubles, while beyond the borders of the USSR buyers were offering two million dollars. How can this be explained? The official Soviet explanation points to the different wage rates in the military industries in the US and the USSR. Salaries and wages amount to 45% of the cost of military production in the US, while in the USSR the figure is not higher than 20%. The rates of amortization of fixed capital in the US are also higher than in the USSR. Finally, the systems of price-setting are quite different. In the USA, prices for military technology are influenced by the market forces. In the USSR production is supplied at administratively determined wholesale price.⁶

As a result, the cheapness of Soviet military hardware is only seeming, in that it is inexpensive for the "customer"--i.e. for the military - but not for society, which is made to pay in full for

⁶S. Guchmazov, Pravda, July 30, 1990.

all the losses and overruns. What's more, corrections for inflation were not reflected in the budget although the rate of inflation for military goods usually surpasses the general economic indicators.⁷

Answers of Soviet officials to the question of how the military expenditures of the two countries were compared sound rather hollow and vague. The chief of a department of Gosplan on the one hand stated that the accounting system that had arisen in this field in the USSR had turned out to be somewhat different from that proposed by UN experts and that this system had been determined in line with practical requirements--such as the structure of the Armed Forces, the system of management and financing etc. On the other hand he asserted that defense expenditures correspond to the basic sections and outlines of the United Nations accounting tables.⁸

It seems likely however that the comparison of any indicators taken from market and non-market economies is in general exceedingly difficult without first setting an equivalent pricing coefficient.

There are also some official statements on the scale of military industry proper. Industrial potential of military sectors is said to comprise 6.4% of production potential of the economy.⁹

⁷Gonchar, 1990.

⁸R. F. Stepanov, Pravda, July 30, 1990.

⁹Baklanov, O. D., report to the 28th Congress of CPSU, Pravda, July 7, 1990.

This leaves one guessing what is meant by the production potential of the economy: some measure of output (gross social product, GNP; NMP), or fixed capital stock? It is further stated that annual sales of equipment to the armed forces are about 30 bill. rubles.¹⁰

Soviet specialists make use of indirect indexes to describe the military industrial complex, determining its share in the production of all machinebuilding using prices that are near to world market levels. According to one of these estimates, this share is over 60%, while the share of durable goods - no more than 5%.¹¹ Production capacity of the military machinebuilding is estimated to be two or three times greater than that of the civilian machinebuilding. The distortion of prices for machinebuilding production leads to a distorted understanding of the share of military production in the entire machinebuilding complex. In 1988 it was believed that the share of machinebuilding production going to armaments and military hardware use was about 30% of the total, with 50% being investment goods and 20% - consumer durables. Recalculating using the world price levels one finds that 62-63% percent went to military uses, 32% into investment equipment and only 5 or 6% to consumer durables.¹²

¹⁰Baklanov, in: Pokrovskii, 1989.

¹¹Iaremenko, 1990.

¹²Iu. Iaremenko, A. Ozhegov, and E. Rogovskii, Kommunist, No. 1, 1991.

1.2 Defense Mentality.

The strength and significance of the military industry does not stem exclusively from the amount of resources it controls. It is bolstered by what the prominent writer A. Prokhanov approvingly calls "national defense consciousness". Defense consciousness became an integral part of the mindset not only of the establishment, but of the man in the street as well. It is precisely for this reason that the official documents concerning the conversion process are so contradictory, the positions taken by government figures so restrained and indeterminate and the debates over all aspects of the "Defense issue" so acrimonious.

Defense industry created a special environment for the people working there. Higher pay, better access to apartments, consumer goods, and other privileges were only part of this environment. Another part was the sense of special importance, of performing vital work for the good of the country.¹³ One expression of this spirit states that "the enterprises of the defense complex were created by the whole people, at times at great cost to its own well-being and living standard for the accomplishment of a vitally important state task - the insuring of the defensive capability of the nation."¹⁴ If anything, privileges served to confirm this sense of mission. Conversion (and other processes in the economy and society) undermines this special environment. This can be expected to provoke a sharp reaction from some of the people

¹³See. e. g., Protasov, 1990.

¹⁴"Status ...", 1990.

involved, from utter despair to stiff resistance. The suicide of the former Director General of Votkinskii Zavod missile concern can be cited as an example of the former.¹⁵ The manifestations of the latter will be analyzed at length in this report.

The influence of leaders and administrators of the defense complex is pervasive and important in governing circles. And it is not merely that the Ryzhkov team and now the Pavlov team is composed primarily of representatives from the Military Industrial Complex (MIC). The defense mentality, concentrating in its approach the very extreme centralizing tendencies of the Soviet economy and the anti-market totalitarian methods of its management, has penetrated all levels of the state apparatus.

¹⁵Votkinskii Zavod was producing SS-20. Whatever the actual motives for the suicide of V. G. Sadovnikov, it has been perceived as caused by, or related to, conversion. See Sabirov, 1990.

2. CUTS IN THE MILITARY EXPENDITURES AND THE INDUSTRY'S RESPONSES.

2.1 Pressures on defense industry.

One can see the beginning of conversion in 1988, when defense industry was called upon to help with supply of consumer goods. At that time, the ailing Ministry of machinebuilding for light and foodprocessing industries was disbanded, and its plants (numbering about 250) were transferred to different defense industry ministries. This stage represented a further diversification of the MIC, which acquired additional capacities and personnel. It was expected that the defense sector will use some of its resources to shore up its newly acquired production lines. Yet this presented little threat to the MIC, and was easily handled within the existing framework. We will further discuss the effects of this early stage of conversion when we turn to the viability of civilian production within MIC (chapter III below).

The next stage came with the top-level decision to cut military expenditures by 14% in 1989-90.¹⁶ The conclusion of the arms limitation treaty on elimination of intermediate range nuclear missiles and the general warming of the international relations was cited as the reason for the cuts. At the same time, the leadership came under increasing domestic pressures to cut military expenditures. The mounting budget deficit called for cutting government spending. The disintegration of the consumer market called for

¹⁶Decree of the Presidium of the Supreme Soviet of March 21, 1989 "On reduction of the Armed Forces of the USSR and defense expenditures in 1989-90".

increased supply of consumer goods.

Cuts in military expenditures translate into cuts in military orders to the industry. Budget cuts are being handed down to the General Staff, which then decides which orders to cancel. Military production is said to have been cut by 19.5% (apparently, in 1989-90).¹⁷ When orders are cut, investment is cut, as well, and construction projects get mothballed.¹⁸ If the cuts in military orders come first, and conversion is only a reaction, then it is clear that some plants will simply be left without orders, with little else to do.

There are widespread reports of the military industry plants experiencing financial difficulties verging on insolvency. All over the country, the plants are already being stopped, there is no money to pay wages. It was because of the financial difficulties that "Vagonzavod" [Railroad car plant] sold tanks to ANT cooperative.¹⁹ In L'vov region, defense industries' plants are in perilous situation: they lost large number of orders, some are already bankrupt, and stopped paying wages to their employees.²⁰ Because of the decline in "special" orders, Donetsk "Tochmash" got into trouble, but was able to switch rapidly to civilian goods.²¹ In Leningrad region, "absence of scientifically founded program of

¹⁷Khrapovitskii, 1990.

¹⁸Vorontsov, 1990.

¹⁹Lukoshiavichius and Tepliakov, 1990.

²⁰Golovenko and Iastrebtsov, 1990.

²¹Bik and Shloma, 1989.

conversion causes underutilization of production and research collectives, loss of trained personnel."²² Industrial production in Udmurtiia fell by 1 billion rubles because of the decline in military orders. Conversion there was to have led in 1990 to the increase in production of consumer goods equal to 54 million rubles and by the end of 1995--to almost half a billion.²³ In 1988, when TsAGI (Central aerohydrodynamics institute, the lead institution in aviation R&D) was switched to khozraschet, its centralized financing was cut, and it had to earn money through contracts with design bureaus for research on particular aircraft. While this is not new for TsAGI, now the design bureaus themselves lack funds. The institute, meanwhile, has huge expenses, such as the upkeep of its unique equipment and of the town Zhukovsky. During a short period, financing was cut (compared to the plan) twice, in large amounts and without warning. In order to stay solvent, TsAGI took out loans for many millions of rubles, stopped paying suppliers, and annulled some contracts.²⁴

Financially strapped enterprises would not be able to keep all the workers they now have. In 1990 defense contract cuts were supposed to eliminate 500,000 jobs. Further 600,000 redundancies are expected in 1991.²⁵ It is currently planned to retrain most of

²²B. V. Gidasov, speech at the CPSU CC Plenum, Pravda, Feb. 7, 1990.

²³ Izvestiia, September 21, 1990.

²⁴Zagainov, 1990.

²⁵Lukoshiavichius and Tepliakov, 1990; Ivashko, 1991.

these people within their plants, but it is hard to believe that layoffs can be completely avoided. In Glazov, in hard hit Udmurtiia, there is a need for labor exchange. In the next 2 years, 12-15 thousand people will be made redundant.²⁶ Thirty enterprises in the Sverdlovsk region expect 13 thousand workers to become redundant by 1995. At the Ministry of defense industry more than 70 thousand workers became redundant in 1989-90.²⁷

Much of work for the military was performed outside of the MIC ministries by other economic ministries, the Academy of Science, and by teaching institutions. So far we found little information on how these institutions cope with cutbacks in military orders. It was reported that computer science projects (e. g., on LANs) at the Academy of Sciences are rapidly losing rich sponsors.²⁸

2.2 Conversion program as the industry's response to pressures.

The military industrial complex, its ministries and managers of the plants concerned want to preserve as much of their domains as possible, for obvious reasons. In arguing their case, the defenders of the MIC usually praise it as the country's best achievement, noting its alleged international competitiveness and "intellectual potential". This upbeat assessment of the military industry is usually shared by the liberal, pro-market Soviet ex-

²⁶Sabirov, 1990.

²⁷B. M. Belousov, report to the XXVIII congress of the CPSU, 1990.

²⁸Mikheev, 1989.

perts. They also point to the continued international threats to justify their demands for as little change as possible. In the word of a declaration signed by more than forty managers of the largest defense plants, "... despite the relative thawing in the international climate, it is necessary to retain the historically developed inter-branch coordination, centralized distribution of material-technical supplies, state financed scientific research and development work, and a corresponding level of material stimulus in order to maintain the nation's defense capability." ²⁹

The top leadership is sympathetic to the pleas of the defense industry. In Gorbachev's words, "We have to be very careful with defense industry ministries for two reasons. First, everything we do with defense sector should not weaken or omit the issues of security. ... Some people say: the sooner defense industry ministries will disappear, or the smaller will be their number, the faster will conversion proceed. I do not think this is so." ³⁰

The preservation of the scientific potential of defense industry research institutes and design bureaus under the conditions of resource cuts is the matter of particular concern for the leadership. The Commission on military policy of the Central Committee of the CPSU stated that "One of the fundamental tasks is to preserve high defense potential, its scientific and technological basis, to integrate the tremendous intellectual strength of defense sector into the renewed economy without lowering its level, espe-

²⁹"Status ...", 1990.

³⁰Gorbachev, 1990.

cially under the conditions of market."³¹ The deputy premier and the Minister of Defense Industry stated that "conversion of the defense industry is being conducted in such a way as to ensure maximum preservation of the productive capacities of defense enterprises." There is no discussion of disassembly or reorientation of the defense industry capacities.³²

How does one preserve the organizational structure, the capacities, and the personnel in the face of cutbacks in military orders? State program of conversion through the year 1995 is the defense industry's answer to this problem. This program was developed by the State Commission of the Council of Ministers of the USSR on Military-Industrial affairs, the Ministry of Defense and the defense departments of the State Planning commission (Gosplan). The Ministry of Defense specified the cuts in production of weapons, and Gosplan developed the program on the basis of these data.³³ Draft State program for conversion for period through 1995 was considered at the meeting of Presidential Council on Sept. 28, 1990. It has not yet been passed by the Supreme Soviet, but is already being implemented.

The program is based on the planned 14% reduction in defense spending in 1989-90. The share of defense spending in the National

³¹Baklanov, O. D., report to the 28th Congress of CPSU, Pravda, July 7, 1990; "Oborona ...", 1990.

³²Belousov, 1989.

³³Kotov, in Khrapovitskii, 1990.

Income is to be reduced by a factor of 1.5 in 1991-95.³⁴ (See section 1 of the first chapter of this report for comments on the meaning of these numbers.) The production of conventional offensive weaponry - strike aircraft, tanks, artillery, the related ordnance - would be significantly reduced. Likewise, a reduction of numerous strategic offensive weapons is foreseen in the plan, both of land- and sea-based types. All of this would be done without halting military production, while strong growth in production of civilian goods would be undertaken.

More than 400 enterprises of the various defense ministries and more than 100 enterprises of civilian ministries would be involved in conversion.³⁵ About half of the defense complex's enterprises would drop their level of defense-related production by more than 20 percent in 1990 according to this plan. Thirty-four enterprises controlled by non-defense ministries and six under control of defense ministries would transition to entirely civilian lines of production.

On the basis of the proposed conversion scheme, over the 1991-95 period the output of consumer goods would increase by 270 billion rubles, or twice as much as in the preceding five-year

³⁴The description of the program is based on the statements by the first deputy chairman of the State Planning Commission of the USSR V. I. Smyslov (*Pravda*, July 30, 1990) and the director of the USSR Academy of Sciences Institute for the Economy and Scientific Technical Progress Forecasting Iu. Iaremenko (*Kommunist*, August 21, 1990), unless specified otherwise.

³⁵The latter number indicates how strongly the MIC is interwoven with "civilian" branches of the economy.

plan.³⁶ The share of civilian goods in the overall output of the military sector, which stood at 40% in 1988-89, was scheduled to rise to 50.2%, 60% in 1991, and 65% by 1995.³⁷ These increases do not mean the continuing commensurate cuts in military production through 1995. As was stated by the highest Soviet official in charge of conversion, further cuts should await new treaties on disarmament, new steps from the West.³⁸ The planned increase in the share of civilian production through 1995 will represent the effects of converting capacities freed by the cuts in military orders that have already been made. It will also be due to the commissioning of new capacities for production of civilian goods, that are planned within the defense sector (see below).

Thirteen priority civilian sectors were defined in conversion program. Production of consumer goods will go from 29 billion rubles in 1989 and 39.5 in 1990 to 71-72 billion rubles in 1995. Output of equipment for agriculture and related industries, light industry, retail trade, restaurants, and health care equipment will double, to 10 billion rubles in 1995.³⁹ Production of equipment

³⁶No breakdown of this increment into those achieved at the defense ministries plants and civilian ministries plants is available.

³⁷Baklanov, O. D., report to the 28th Congress of CPSU, Pravda, July 7, 1990.

³⁸Baklanov, O. D., report to the 28th Congress of CPSU, Pravda, July 7, 1990.

³⁹Baklanov, O. D., report to the 28th Congress of CPSU, Pravda, July 7, 1990; Khrapovitskii, 1990.

for agriculture and related sectors will increase by a factor of 2.1; equipment for light industry - 1.8, equipment for retail and restaurant industry - 1.6, and health care equipment - 2.5. Other directions of conversion include civilian aircraft; computers; civilian shipbuilding; communications equipment; environmental protection equipment; and new materials.⁴⁰

Transfer of technology from the military to the civilian sectors is considered as one of the directions of conversion. The implementation of the plan, naturally, would require capital investment. Forty billion rubles will be allocated towards retooling of existing production lines and the creation of new capacity for output of civilian goods, as well as for the conversion of special dedicated production lines over five years. Out of this amount, 31 billion is intended for the creation of new capacity. Investment into retooling of the existing production capacity is planned at 8.9 billion rubles.⁴¹

Draft program for conversion envisions retraining, reemployment, and support for workers made redundant in military production. For these purposes 800 million rubles have been set aside including some 250 million strictly for retraining programs.⁴²

⁴⁰Kotov in Khrapovitskii, 1990.

⁴¹The leadership of MIC asked the Supreme Soviet for 63 billion rubles for conversion, with 50 billion earmarked for creation of new capacity and 13 billion - for conversion proper (Lopatin, 1990). Apparently, this request was turned down as being too high.

⁴²"Zasedanie Presidentskogo soveta SSSR", Pravda, Sept. 29, 1990.

2.3 Criticism of the Program.

The conversion program outlined above drew criticism both from the left, on the part of liberal scholars, and on the right, on the part of the leaders of the defense complex enterprises and branches of industry.

The right's criticism is grounded essentially in the absence of a financial compensation for the losses that would be incurred as a result of the halt of military production and the transition to civilian goods production. Typical of this point of view is the reasoning put forward by the director of the Moscow Khrunichev machine-building plant: "The 'Proton' rocket-building program has had a plant closed. There is 30 million rubles in production that will be left uncompleted. Fines must be paid for the unfinished work. We're going to be knocking on doors at both the Ministry of Defense and the Ministry of Finance." The director demands that during the transition to output of the new line of production, the enterprise should, at least for several years, be given a full tax exemption on profits.⁴³ Answers to all these issues are meant to be embodied in the Law on conversion which the leaders of the defense industry sectors are now awaiting. The demands of the defense industry circles in connection with the appearance of the conversion program amount to two fundamental criteria: "Compensate us all the losses involved in conversion and insure the material technical supply for the production of civilian sector goods."

⁴³A. Kiselev, Pravda, December 9, 1990.

The criticism from the left is significantly deeper and more probing.⁴⁴ While the critics' concern is with the unnecessary additional cost of the approach proposed in the program, ours is with the option of reconversion that is being bought at this cost.

According to the Program of conversion, organizational identity of the military industry is preserved, with its own centralized ministry structure, segregated from the civilian sector. This is done as a matter of course - the discussion simply runs in terms of the existing organizational structures without questioning them.

The principles of operation of the MIC - centralized planning and management, hierarchical subordination - also will remain unchanged. Here is how the program envisions the formation of plans for production of civilian goods at the enterprises undergoing conversion. The process would start with the ministries which are the users of the defense sector's civilian products (e. g., Ministry of retail trade for consumer goods, Ministry of agriculture for farm equipment) submitting their orders. These orders will be analyzed at the State Committee of Science and Technology, followed by a paring down by the State Commission on military industrial issues. The orders approved by these bodies will then be adopted by the defense industry ministries concerned

⁴⁴Among the most insistent critics of the program, taking a stand for clear market orientation are Senior Scientific associate of the Institute of World Economy and International Relations K. R. Gonchar, Senior Scientific Associate of the USA and Canada Institute A. Iziumov, and chairman of the Soviet National Commission for Conversion Initiative, Academician V. S. Avduevskii.

as their production targets and finally communicated to the enterprises. All costs, subcontracting, and delivery schedules would be determined centrally. This is the command principle in its classical incarnation.

The program of conversion also does not envision any reduction in the size of the military sector (number of plants, number of employees).⁴⁵ Capacity for production of civilian goods is planned to remain under the control of the defense complex. This applies to the plants and products that do not in any way relate to the needs of national defense. Nearly 20% of defense complex enterprises now produce strictly civilian goods. Yet they are under control of the MIC, which produces some 50% of all consumer durables including all television and radio sets, tape recorders and other radio-electronic goods, sewing machines, and up to 70-80% of refrigerators and washing machines.

The creation of new capacity for the increase in output of these types of items, for which 31 billion rubles are to be allocated, does not, in fact, have anything to do with the conversion of the defense complex. Rather, it represents diversification of the military industry.

The question of administrative subordination of the enterprises with mostly civilian output is not a formal one. Leaving these enterprises under the control of the defense complex makes more difficult the transition to market relations, the rejection of the sectoral approach to management and the demonopolization of produc-

⁴⁵Avduevskii, in: Lukoshiavichius and Tepliakov, 1990.

tion as well as the incorporation of new forms of ownership and property. In the "particular" conditions of economic operation that are characteristic of the MIC, economic self-sufficiency remains impossible.

The critics of the program assert that if it is put into practice, the military enterprises will be paying a sort of metayage, or serf's fee paid in kind with the civilian sector goods, while the civilian sector will continue as before to stagnate since the additional investments will all go primarily to the MIC. Production of consumer goods remains the secondary responsibility of the sector primarily charged with the military production. The proper solution would be to transfer outright a portion of the plants belonging to the MIC to the civilian sphere and let them come into the free market. The government's business would be to create the stimulus for conversion by organizing a special fund, offering tax incentives and taking care of training and placement of displaced workers. And then the pathways of conversion itself would be decided by the market. The process must be made irreversible, otherwise there would always remain the potential for a re-conversion which the leaders of the defense industry complex are seeking to retain as a possibility.

Another fairly important critical approach proceeds from the fact that the program is directed at increasing the volume of consumer goods production chiefly through the growth in prices.⁴⁶ The

⁴⁶Iu. Iaremenko, E. Rogovskii and A. Ozhegov in Kommunist, no. 1, 1991.

value of consumer goods produced by the defense ministries is planned to double by 1995. However, the quantities of goods produced are to increase at significantly lower rates. For example, radio sets are to show a 20% increase, color TVs - 60%, and tape recorders - only 4%.

The defense industry's demand for inputs for the production of civilian goods in 1995 will exceed the level of 1988:

- rolled ferrous metals - by a factor of 1.7;
- rolled aluminum - by a factor of 2;
- rolled copper - by a factor of 1.8.

At the same time, the demand of military production for metal will be reduced insignificantly. Thus, the overall demand of the defense sector for scarce resources will increase. This is the price that defense circles' effort to retain the possibility of reconverting back would exact.

In essence the conversion program would preserve those inefficient structures that have historically dominated and would increase the downward trend of the economic situation in both the defense industry sector and in all of the USSR's economy.

3. THE VIABILITY OF CONVERSION.

How successful will the defense industry be in its effort of self-preservation? To answer this question, we analyze the course of conversion since 1989.

3.1 The results of conversion, 1989-90.

In 1989, 300 enterprises were involved in conversion effort.⁴⁷ Of these, only 3 were being fully converted to civilian production. The scale conversion increased in 1990. The defense budget (according to official sources) was 71 bill. rubles in 1990, or 6.4 rubles less than in 1989. Spending on defense R&D was cut by 1.6 bill. rubles, and equipment purchases were reduced by 2.1 bill. rubles. (Of course, the relative magnitude of the expenditures cuts will look much more modest if the overall expenditures number is greater than the official one.) More than 200 research institutes and design bureaus in the defense sector began work on state orders for consumer goods. It was planned in 1990 to cut purchases of ammunition by 20% from the 1989 level, fixed wing aircraft by 12%, and military helicopters by 60%.⁴⁸ The nuclear energy sector has ceased production of superenriched uranium for military purposes. Three industrial plutonium generating reactors have been shut down and two more will be shut down in the near future. The development of atomic energy itself has slowed considerably as well, which has led to an even greater reduction in the demand for uranium and accordingly to a re-orientation of the mining, reactor-building and uranium processing sub-branches. The reduction in production volume across the ministry was equal to 30%.⁴⁹

⁴⁷Iziumov, 1989.

⁴⁸Based on data from: Major General V. Riaboshapko and Colonel V. Vtorushin, Military Thought, no. 9, 1990, p. 43.

⁴⁹The first deputy minister of nuclear energy and industry, B. Nekipelov, Pravda, November 10, 1990.

The data on production cuts cited above refer mostly to plans, while their implementation remains questionable. Of the 400 defense industry enterprises which are subject to conversion only 5 or 6 have been fully converted. Of the 120 types of goods for the civilian sector designated by the plan only 23 have been put into production and they are markedly inferior to similar goods produced abroad. In the first nine months of 1990, production of consumer goods in the defense complex increased by 25%. This compares favorably to the rate of growth of all consumer durables of only 13%. Growth rates for the number of goods produced were lower, but still impressive (see Table 1.1).

Table 1.1 Production of consumer durables in the first nine months of 1990, growth rates relative to the same period of 1989, %.

Item	Growth rate	Item	Growth rate
television sets	7%	sewing machines	17%
color TVs	15%	washing machines	18%
radio sets	8%	refrigerators	0%
magnetolas and radiolas	26%	tape recorders	9%
VCRs	3.6 times		

Source: Goskomstat, 1990.

The products listed here are the ones which have long been produced exclusively by the defense sector ministries at specialized plants. Their growth means that new capacity is coming on stream at these plants, or new plants are being built, as is the case with the VCRs. There are reasons to believe that most of the discrepancy between the growth rates of civilian production in value terms and in physical terms represent price increases. Thus,

an agricultural pump manufactured by a civilian plant used to cost 180 rubles, while a defense industry plant has been charging 3,412 rubles for it. The price for a set of equipment for butter making went up from 90,400 rubles to 160,000 rubles; bottle-washing machines from 11,300 rubles to 50,000 rubles. This is but a small sample of instances of drastic price increases. Prices for some types of equipment for the food industry would rise by 30-50 times to current levels. There is also another side to the problem. Technical equipment for the agro-industrial complex, made in the shops of the defense complex, will be designed, for the most part, for the larger, more inefficient economic entities. The small processing plant, a farmer's operation would as before end up without the necessary equipment and implements. A classical situation for the Soviet economy: the contradiction between the interests of the producer and the consumer is settled in favor of the producer.

Early in the conversion process, officials and managers in the aircraft industry hoped that capacities freed from the military orders can be used to produce planes for export. They claimed that the aircraft industry is the only sector of the Soviet manufacturing which is internationally competitive.⁵⁰ But these hopes did not materialize so far. It appears that Soviet aircraft industry is not competitive, after all. Even the Soviet airline, with its worn out and obsolete fleet, prefers Boeings to domestic planes.⁵¹

To export, one needs start-up financing in hard currency. But

⁵⁰Baklanov, in: Pokrovskii, 1989; Zagainov, 1990.

⁵¹Khrapovitskii, 1990; Vsklokochnyi, 1990.

almost all hard currency proceeds of the aircraft enterprises now go into the State budget.⁵² This makes Soviet aircraft enterprises interested in joint ventures with the Western partners. One example of such cooperation which received a considerable amount of publicity is the Sukhoi-Gulfstream joint venture intended to produce supersonic business jets. But it is so well-known precisely because of the small number of such deals. This project, and several others, are still far from being completed, with Western partners still hesitant to commit resources in the current climate of uncertainty. Despite their well-publicized enthusiasm, Soviet defense industry executives are ill-prepared for joint ventures. They have few concrete business ideas to offer to potential foreign partners, as was demonstrated during a recent visit to Moscow by a delegation of US businessmen sponsored by the Council on Economic Priorities. Soviet defense enterprises were described as "totally unprepared" for business contacts with foreign partners.⁵³

3.2 Obstacles to conversion.

Since cutbacks in military orders caught defense industry by surprise, initial difficulties were to be expected. Yet the problems of defense industry go beyond the lack of preparation, tardiness in adopting the program of conversion, or absence of the Law on conversion. There is a number of structural obstacles that

⁵²Mikheev, 1990.

⁵³Kommersant, Nov. 19, 1990, p. 11.

render the objectives of conversion unattainable at reasonable cost. Some of these obstacles are related to the present organization of the Soviet economy. Others have to do with technological factors and will persist even if the Soviet economy is reformed along market lines.

a. A major obstacle to conversion, peculiar to command economy, is the difficulty of arranging for supplies of inputs for the civilian products. Production of armaments depends on a wide network of component suppliers and various other inputs. For example, production of short and medium-range missiles depended on 200-400 suppliers. A plant producing frontal aviation aircraft depends on more than 100 suppliers who are subordinated to various ministries. When conversion is implemented, these ties become disrupted. For example, a design bureau developing helicopters complains that its export drive is thwarted by its inability to contract for mass production of its designs. All contacts between the bureau and the production plant have to go through the ministry.⁵⁴

Rearranging supply ties has always been difficult in the Soviet economy. In the current situation, when central government is powerless, economic autarky prevails, and barter deals become the principal form of interaction between enterprises, this becomes even more difficult. (The same disruptions of the supply system that make conversion difficult also threaten the production of military items; see section 1 of chapter IV below.)

⁵⁴Mikheev, 1990.

b. Another problem is that prices for and profits from civilian goods are much lower than those derived from the military goods being phased out. Therefore, in order to sustain the existing salaries and find funds for conversion of production capacities enterprises have to turn to the state budget for subsidies. For example, the Votkinsk plant which used to produce the SS-20 missiles began to produce baby carriages and washing machines. It was able to do so only with the help of a state subsidy. A study of 30 defense industry plants in the Sverdlovsk region in 1989-90 shows that the growth of production of civilian goods would not compensate for the losses connected with a reduction in military items manufactured.⁵⁵ As a consequence, these enterprises registered losses for the first two years of conversion amounting to 122 million rubles. The situation is the same in the Cheliabinsk region. Just as in Sverdlovsk, defense enterprises are losing their profits while general labor costs are not dropping. The ministries of defense machinebuilding subsidize new civilian products for the period when their production is being mastered. This does not appear to be sustainable in the long run.

One of the reasons for the need for subsidies is the high cost of civilian products, addressed in the next paragraph.

c. Converted capacities of the defense sector turn out civilian products at higher cost than specialized plants of civilian ministries. This is one of the reasons for high prices of these

⁵⁵ Ekonomika i Zhizn' No. 52 1990.

products, mentioned above. (The enterprise's desire to inflate the value of output, for reasons specific to the current Soviet system, is another reason.)

An important reason for the high cost of civilian products is the industry's intention to keep the conversion reversible. Thus, technological systems for military production that are not used for civilian production are not being kept on both physically and on the books of the enterprises. The latter must pay out considerable sums for the depreciation of equipment standing idle.⁵⁶ This is the cost of reversibility pure and simple.

For the sake of reversibility, cuts in orders are being spread among many plants. Instead of shutting down production of a military item at one plant, production runs are shortened at several plants. This results in high overhead per unit of output. Civilian production is then made to bear part of these costs.⁵⁷

Very often, high costs are due to the use of expensive precision equipment, expensive materials; and employment of highly skilled and thus better-paid workers in the production of simple and cheap goods. (Defense industry managers out to disparage conversion cite the examples of aircraft plants switching to production of sauce pans.) Here, part of the problem lies with the choice of the civilian product. Under the current system, defense

⁵⁶See Sotsiologicheskie issledovaniia, No. 5, 1990 on Ioshkar-Ola machinebuilding plant. It is clear that this is a typical case. The director of the Moscow Khrunichev plant mentioned above also spoke of this problem.

⁵⁷Sabirov, 1990.

plants are ordered to produce specific products by their ministries, often with little regard to the nature of the existing production process. This is the normal mode of operation of the defense sector. Additional costs from the arbitrary assignment of products can be considered the costs of keeping converted production within the defense industrial complex.

Yet even if the defense industry plants were freed from the tutelage of their ministries, the cost of civilian products they produce would have been high compared to civilian plants. This has to do with the fundamental characteristics of the defense sector. The sector includes a large R&D establishment. About one third of all fixed capital of defense industry is said to be in the research and design facilities.⁵⁸ The ratio of R&D expenditures to value of output is 20 times higher than in the civilian sector.⁵⁹ This high R&D intensity of the defense industry is not a specific Soviet feature - the same is true for this sector worldwide.

Production of civilian goods does not need such massive R&D base. Yet this is exactly the "intellectual potential of the sector" that the MIC is trying to preserve. This results in experimental and testing facilities of research and design institutions getting mass production assignments, carried out at high cost.

Another important characteristic of the military industry is the low share of all-purpose equipment, and high share of special-

⁵⁸Protasov, 1990.

⁵⁹Lukoshiavichius and Tepliakov, 1990.

ized machine tools, intended to perform a specific operation (e. g., making a tank turret). Whole plants were designed around such specialized equipment. They can be turned to alternative uses only at prohibitive cost. A defense sector manager estimates that fixed assets that can be switched to consumer goods production represent 3-4% of industrial fixed assets. This would increase the output of consumer goods by 1.8-7.0 bill. rubles.⁶⁰

More generally, the costs are high because the goods are produced at the facilities and by the personnel that are not specialized. Specialization has been the main direction of economic progress throughout human history. Conversion, as understood in the USSR today, goes against specialization. This alone is a sufficient proof of its economic infeasibility.

Some of the problems cited above can be resolved by conversion to civilian output of comparable technological level, i. e., aircraft factory making civilian planes rather than sauce pans. However, such conversion is an exception, rather than the rule.⁶¹

d. Dubious legal status of most of the new technologies in the military sector makes their export potential questionable. On one hand, the original Soviet-developed technologies lack patent protection (after all, they have been, or still are, secret!). While this problem can be resolved, there is a stickier one presented by the fact that the Soviet military industry freely

⁶⁰Protasov, 1990.

⁶¹Sabirov, 1990.

borrowed from its Western competitors. Advanced technology that is based on, or incorporates parts of, stolen Western technologies, apparently cannot be patented in the West.⁶²

e. An impediment to conversion that is can be surmounted easier than the others is the lack of understanding on the part of the defense industry personnel of the specifics of the civilian production they are starting up.

Thus, designers and managers successful in the military field are discovering that civilian technologies have their own specific features, which can only be learned by working in the field for a while.⁶³

The lack of preparedness of leaders of the defense industries to adapt to conditions of conversion is exemplified in the situation that arose in Sverdlovsk region where three enterprises, acting on the acute shortage of household laundry machines, simultaneously began producing them independently of one another. Each plant planned to build from 120-250 thousand machines per year, while "Uralmashzavod" [Urals Machine building plant] already produces half a million such machines and is planning to double its annual production. The lack of data on the demand for washing machines could thus lead to their overproduction.

The Sverdlovsk plant "Uralgiprotiazhmash" [Urals State Design Office for Heavy Machinery], having planned the production of vacuums, decided to design the product itself, even though another

⁶²Perekhod . . ., 1990, p. 151.

⁶³Protasov, 1990.

Sverdlovsk enterprise - "Uralelektrotiazhmash" [Heavy Electrical Machinery-Urals] - already makes fairly good quality vacuums. It is easier to buy the plans and drawings, the technology and experience than to have to develop all of it independently from the beginning.

3.2 Effects of conversion on the military industry.

The purpose of conversion is to preserve as much of the defense sector capacity and personnel as possible. Yet this purpose proves difficult to achieve.

Conversion has an immediate and clear effect on the personnel of the defense sector. The switch from products that are important for the nation and technologically sophisticated to sauce pans damages the morale of the workers. Financial difficulties of the defense plants, analyzed above, translate into lower profits, hence lower bonus funds and lower bonuses paid to the employees. Retraining often means accepting lower wage.⁶⁴ It may also mean the loss of seniority (l'gotnyi stazh, important for retirement benefits), less access to the consumer goods that are in short supply, or loss of one's place on the waiting list for apartments.⁶⁵ All this leads to the exodus of the most productive workers, and discouragement of those who stay.

⁶⁴It is claimed that in the 1980s, wages and salaries in military industry were approaching the levels of civilian industry (Protasov, 1990).

⁶⁵Sabirov, 1990.

What are the effects of conversion on the capital stock of defense sector? When equipment is put to uses for which it was not designed, as described above, its tear and wear is accelerated.⁶⁶ There are also some hints of another process. Soviet enterprises are known to be reluctant to part with obsolete and worn out equipment. Low retirement rates turn working plants into veritable museums of industrial archeology. There is no reason to believe that the military industry is different in this respect. Indeed, one defense sector manager claims that fixed capital in the sector is very much worn out, and that the share of advanced imported equipment is half of that in car manufacture, machine tools, and other civilian sectors.⁶⁷ If this is so, conversion may be tilted towards especially obsolete plants. There is a hint of this approach in the results of a study that found plants and enterprises undergoing conversion to be far from the most advanced technologically and economically.⁶⁸ If this conclusion, reached for one region, is valid for the whole country, then conversion is performing an economically useful function of retiring worn out and obsolete assets. This would lower the average age of fixed capital in the defense sector, increase reliability, lower the repair bill, and so on.

We must conclude that conversion, as currently practiced in the USSR, is not viable in the long run.

⁶⁶Protasov, 1990.

⁶⁷Protasov, 1990.

⁶⁸V. L. Kunin, Sotsiologicheskie issledovaniia, No.5, 1990.

4. THREATS OF REFORM, DISINTEGRATION, AND SEPARATISM.

The first two threats to the military industry - the pressure to produce more consumer goods and cutbacks in military orders - come from the leadership sympathetic to the industry. While the Soviet government needs more consumer goods and budget savings, it also wants to keep as much of the military industry as possible. The third threat, which has emerged in 1990, is different: it comes from the forces that are impersonal and implacable. These forces can be grouped under three broad headings: the disintegration of command economy; the disintegration of the USSR; and transition to market. It will be more difficult for the military industry to cope with this threat.

4.1 The disintegration of command economy.

Soviet economy has always had trouble assuring that supplies of inputs flow to those who needs them in appropriate amounts and in due time. Getting needed inputs was the chief worry of a manager of industrial enterprise. The high status of the defense industry was reflected in the greater reliability of its supplies. The disintegration of the command economic system since 1988 resulted in the progressive degradation of supply system. We know that in the civilian sector, state orders for supplies are not honored; suppliers violate their obligations, increase prices, or demand additional in kind payments as a condition of delivering prearranged supplies. These disturbances, coupled with the general decline in production, closing down of many plants for ecological

reasons, and the disarray in the railroad sector, reverberate through the economy. It is also known that supply disturbances are not limited to the low priority sectors, and hit high priority civilian sectors, such as petroleum extraction, as well. Faced with lack of supplies, producers cut their output. Many enterprises are on the verge of closing down.

The chaos in the civilian sector is spilling over into the defense industry. In the words of the managers of the large defense plants, "The disproportions of production and material-technical supply, the destruction of the historically developed and coordinated links in the system has created a critical situation that is slipping out of control."⁶⁹ Translated into normal language, this means that planned supplies are not sufficient for meeting output targets, that old suppliers are being lost and the new ones are difficult to find. The result must be the unplanned decline in military production, over and above the planned cutbacks.

The supply situation will not improve in 1991. If anything, it will become worse. There are two reasons for that. First, only 60% of all contracts for supply of inputs were concluded by the beginning of the year, whereas close to 100% of contracts were concluded by that time a year ago.⁷⁰ Second, as Soviet Union is approaching international insolvency, the flow of imported supplies is drying up. We can expect widespread plant shutdowns in the

⁶⁹"Status ...", 1990.

⁷⁰See, e. g., Ryzhkov, 1990.

civilian sector in 1991. No matter how high the priority given to the defense industry supplies, as civilian plants shut down, defense sector will have no choice but to curtail its production.

4.2 The disintegration of the USSR.

The USSR has been disintegrating into independent, sovereign, or autonomous units. The case of several peripheral republics seeking full independence receives the most attention, but this is only part of the story. Even the republics that are run by the communist party and announce their intention to stay within the USSR have been grabbing a significantly larger share of decision making powers. In the case of the Russian republic, lower administrative units such as autonomous republics and regions have also been staking a claim to greater control over the economic life in their territories.

As the territorial authorities start asserting control over the enterprises of the Union ministries in their territory, they come into a conflict with the strictly centralized structure of military industry. Moreover, the objectives of the local authorities are inimical to those of the MIC. They are not in the least concerned with reversibility of conversion, but are strongly interested in consumer goods production and exports. Thus, regional party organs were forcing military plants to start production of various, often inappropriate, civilian goods at the early stages of conversion.⁷¹

⁷¹Protasov, 1990.

The defense industry managers protest what they see as the "... attempts to interfere with the management of defense enterprises on the part of civilian authorities at all levels."⁷² The Minister of Defense Industry is concerned about the decentralization of management and in particular the resolution of the Russian Congress of People's Deputies concerning the transfer of enterprises of the Ministry of Defense Industry to control by the various union republics.⁷³

Yet there are also signs that the industry is searching for a compromise with the local authorities. Thus, the first deputy minister of Nuclear Energy Industry, while advocating keeping all the converted enterprises within the defense industry and retaining centralized management structure, also suggests that scientific and technological strategies and priorities of the sector should be developed in light of the sovereignty of the union republics. These strategies should take into account the interests of regions and of the enterprises both for the design and implementation of conversion plans.⁷⁴

The devolution of economic power to the regional authorities is likely to continue, and the pressure on the military industry to open up on the local level will be growing.

⁷²"Status ...", 1990.

⁷³B. M. Belousov, Pravda, July 6, 1990.

⁷⁴B. Nekipelov, Pravda, November 10, 1990.

4.3 Transition to market.

Transition to market economy is now the official policy of the Soviet government, and even of the Communist party of the USSR. Here, we look at the implication of two alternative proposals for such a transition for the defense industry.

4.3.1 Market reform proposals.

There are two main competing programs for transition to a market system. One of them, developed by a group of scholars under the leadership of Academy Member Shatalin and known under the name "500 days", was rejected.⁷⁵ Still, this text proved to be very influential, and may yet reemerge in one form or another.

The all-Union Parliament accepted the government proposal under the title "Main Directions for Stabilization of the National Economy and for Transition to a Market Economy."⁷⁶

The main difference between the two proposals, from the point of view of the defense industry, is the sharing of economic power between the center and the republics. The Shatalin proposal would let the republics decide which functions should be delegated to the center. This would, in effect, destroy the centralized system of planning and administration which is the cornerstone of the current organization of the defense industry. The government proposal would preserve strong central government.

There are also significant differences in the treatment of

⁷⁵Perekhod ..., 1990.

⁷⁶"Osnovnye napravleniia ..", 1990.

conversion proper in the two proposals. The Shatalin proposal is strongly concerned with efficiency, and all but neglects providing for reconversion. It is designed to extract from the military sector as much as possible and as fast as possible, to help the economy by transferring resources to the civilian sector. The section on conversion bluntly proclaims the goal of "demilitarization of the economy". The redirection of materials and labor from the military to the civilian plants is to be the main venue for conversion, more important than production of civilian goods in the military plants. The beauty of this approach is that it requires little or no investment. The program suggests that this should be the main direction of conversion in the first 1,5-2 years. Only after that (presumably as the transition improves the state of the economy) should significant funds be invested in the defense industry for the purposes of conversion. Another immediate conversion measure that the program suggests is the transfer of the part of the inventory of inputs held by the defense sector to the civilian sector, and switching some of the suppliers of materials and fuel to the defense sector to civilian orders.⁷⁷

In organization terms, the Shatalin program does not advocate the dismantling of the military industry. (The proposed devolution of economic decisionmaking to the republics would do this, anyway). Yet it mentions the need to divest the defense sector of some of the capacity it now has, and to transfer it to the civilian sector.

The Shatalin program is not totally oblivious of the needs of

⁷⁷Perekhod . . ., 1990, pp. 148-9.

the military. Thus, it suggests as one of the ways of conversion shutting down or retooling production facilities while continuing subsidies to keep afloat research, development, design, and testing facilities with defense specialization. It also suggests that production capacities with unique equipment should not be retooled, but rather mothballed.⁷⁸ Still, this program falls far short of the announced and implicit objectives of the defense industry.

In the course of the retooling, all possible privileges might be accorded - in terms of taxation of profits, long-term credit availability, and higher rates of amortization of fixed capital. The reorganization and retooling of enterprises under conversion would be financed out of national budget allocations, including the "fund for assisting conversion".

Against the background of the concrete Shatalin proposal, the "Main directions" look pale and vague and seemingly on purpose leave room for all kinds of various possible interpretations and frequently suggest that numerous "objective" impediments exist to its realization. Not a word is said in this government proposal concerning the withdrawal of converted enterprises from the defense complex system. Instead of this, the following hazy language is included: "Conversion can be effectively implemented if barriers that divide the defense sector from other sectors of the economy are removed. This is compatible with keeping the enterprises which are closely tied with insuring the defense capabilities of the

⁷⁸Perekhod ..., 1990, p. 156. The text mentions shops and sections, i. e., units within plants.

country as the property of the Union government under centralized management."⁷⁹ This implies that some of the industry enterprises will be transferred to the owners, republics or other entities, an audacious statement for as conservative as this one.

The global proposals for market reform are not the only presenting danger for the defense industry. Partial measures preparing the economy for market should not be discounted. The recent anti-trust decree greatly alarmed managers of the defense sector.⁸⁰ We are looking into the reasons for this.

4.3.2 Spontaneous market processes.

While competing programs for transition to market are debated, adopted, and forgotten, the actual processes of privatization and market allocation are gathering steam. The defense sector is already feeling their impact.

The emerging private enterprises (mostly cooperatives) are relatively few in numbers, harassed by the authorities, and face an uncertain future. Yet this sector has already managed to attract a significant number of the most productive workers from the defense sector. The managers of the defense sector complain about the unjustified wage differential between workers in cooperative enterprises and those in state enterprises leading

⁷⁹"Osnovnye ...", 1990, p. 60.

⁸⁰"Status ...", 1990.

the mass migration of skilled workers away from the latter.⁸¹ The process concerns not only blue collar workers, but also scientists and engineers, the very "intellectual potential of the sector" that conversion program strives to preserve. Judging by the scale of number, the defection of the best workers from the defense sector is indeed massive. It is hear that the defense industry has suffered its heaviest losses so far.

As the road to market is being discussed, enterprising individuals are trying to secure their future. In what amounts to a creeping privatization, ministry officials, plant managers, and Communist party bosses are turning their positions and clout into property. Ministries are turned into "holding companies", government enterprises - into "joint stock companies", and there are numerous cases of interpenetration between the government and the private sector, from the Prime Minister down to a plant director. The concept of "conflict of interest" appears entirely foreign to the Soviet bureaucracy. We are currently studying the manifestations of this process in the defense industry.

Under a market system, defense plants will have to settle for inferior resources, or pay full price for the kinds of resources they are used to. The centralized supply system will have to go. The staggering cost of keeping all the present defense plants under the tight ministerial supervision will become visible, and will

⁸¹"Status ...", 1990.

have to be justified.

5. ALTERNATIVE PROPOSALS FOR CONVERSION.

The most profound and substantial proposals for a reconstruction of conversion are voiced in the Ozhegov-Rogovskii and Iaremenko article that appeared in Kommunist. The authors suggest to withdraw from the military industrial system of the Council of Ministers all the enterprises of the Ministry of electronics and ministry of radioelectronics industries, 70-80% of enterprises of the Ministry of Defense Industry and Ministry of General Machine Building, 50-60% of the Ministry of aviation industry and ministry of shipbuilding, not less than 70% of the scientific research and design engineering organizations, thus destroying the departmental monopoly exercised by the MIC. Only 20-30% of the highly specialized arms and military equipment manufacturing enterprises would remain subordinated to the MIC.

Working with the plants withdrawn from the MIC it would be possible to form economically viable concerns operating on a broad base of suppliers across the Union, on direct ties with any civilian or defense enterprises and directed towards an active pursuit of technological exchange.

The method for withdrawing enterprises from the MIC must be based on denationalization of the economy, the provision of the right to the personnel to lease their plants, creating joint ventures and joint stock companies, including participation in the largest corporations. In this way these enterprises would become integral parts of the market economy.

Organizational structures for the production of consumer goods

during conversion are also being outlined. The design, project development, experimental production and technological training and manufacture of scientific-intensive finished parts would be done in a few dozen large companies. Assembly line work, installation-delivery and maintenance in the network of smaller and average sized subsidiaries.

Enterprises that are intended for extensive conversion would be freed from payments to the budget during the conversion period and for three years of the production of civilian sector goods and their turnover tax would be entirely directed to a fund for financing further production of civilian goods.

The article's authors do not define methods alone but goals of conversion as well. In the Soviet Union, despite the shortage of almost all machinebuilding products, the production of civilian products, including 2 billion rubles of production of equipment for the agro-industrial complex, is not in demand and either goes unpurchased, or is purchased for government subsidies or for what in practice are loans that do not have to be repaid. This leaves margin for manoeuvre over the course of conversion. Another goal of conversion would be the development of automobile construction. In the very near term, it would be possible to bring into production capacity that could put out from 300-500 thousand passenger cars and 50 thousand light trucks.

The scope of conversion, according to scholars will depend a lot on how much the doctrine of reasonable sufficiency for defense will be completed with a doctrine of a reasonable sufficiency in

defense industries. In line with western doctrine victory in war consists of an economy that withstands the first strike insures a time gain that allows for the hook up of the civilian economy to the creation and mass production of a new type of weapon unknown to the enemy. In order to do this the economy must be flexible And maintain technical reserves and possibilities of new horizontal ties between enterprises.

Soviet military industrial potential is technologically rigidly determined and directed toward the mass output of arms already known to the enemy. This is why the retention of the rigid distinction of the defense complex from the rest of the economy in the final analysis erodes the national security of the country. It is necessary to reject the rigid comprehensive programmed principle of R&D and production of weapons, a principle that was dictated by the obsolete military doctrine of the 1950s with its plans for the mobilisational preparedness of the defense industry.⁸²

The alternative programs of conversion are designed to benefit the civilian sector. But their authors also claim that a stronger, more flexible and advanced defense industry will result from their proposals. Of course, it is politically unwise to claim anything different. But is there a grain of truth in these claims? This is the issue we are currently investigating.

⁸²Perekhod ..., 1990, p. 154-155.

6. CONCLUSIONS.

The secrecy strictures as before cloud the view of the processes in the defense industry. Still, certain conclusions can be drawn.

1. The military industrial complex remains powerful and has a decisive influence on the government's political and economic decision-making, playing, by all accounts, a significant role in the move to the right noticeable over the last months.

2. Conversion in essence is not being implemented, inasmuch as the reduction in arms production is not being accompanied by an actual retooling of production lines. As a rule, military production capacities are not being disassembled, but rather mothballed. This costly approach allows the military industrial complex the possibility of a re-conversion to military production. (See Appendix A to the report for an additional prospective on this issue.)

3. Multibillion ruble investments outlined in the conversion program are earmarked for the development of already existing facilities for production of civilian goods, rather than for retooling the capacities used for military production. The growth of the value of civilian goods produced is being achieved mostly through price increases.

4. The government is unable and does not wish to withdraw civilian production facilities from the military industry system, or to switch the military industry onto a market track and away from the methods of centralized planning and administration.

5. The general economic chaos leaves its mark on the course of conversion through the breakdown in economic ties and all the other difficulties of the ever longer period of transition to market economy.

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PART II. CONVERSION: INSIDER'S PROSPECTIVE.

1. INTRODUCTION.

This part addresses the question of the economic problems that confront the demilitarization of the Soviet national economy. The problems are enormous, for the military-industrial complex and militarized formations constitute the very nucleus of the Soviet economy. At the present time this demilitarization is conducted under the banner of "conversion," which, in its extended meaning, envelops the following conceptions:

1. Conversion in the narrower sense of the term--the shifting of production from military to civilian goods. This can be accomplished in two ways: either by retooling (i.e., redirecting old productive capacities to produce civilian goods) or by extended diversification (i.e., the acquisition of additional productive capacities for the specific purpose of manufacturing non-military goods).

2. A cutback in the utilization of defense industry production capacities by reducing the output of military output, but without diverting resources and productive capacities for the manufacture of civilian goods. In this case, the problem is the conversion of productive resources (metal, equipment, buildings, labor, land and especially resources and output with a double purpose) which were freed by reducing the volume of military production.

3. A reduction of the military forces. In this case there are several problems with respect to the utilization of the military arms and goods that have already been accumulated: viz., their

destruction in an ecologically safe manner, their sale, or their use for peaceful purposes (in particular, as a source of secondary raw materials). The conversion to civilian use is supposed to include the construction capacities of military enterprises.

4. The conversion of innovation capabilities, research and development, and educational resources.

5. A reduction of military expenditures and diversion of financial resources.

6. The transfer of enterprises from several civilian sectors of machine-building to the military-industrial complex so that these can be re-equipped and the quality of its civilian goods improved.

Thus conversion involves a large-scale restructuring of the Soviet economy. In the broadest sense, it is not limited to the military-industrial complex, but it pertains both to the national wealth that has been accumulated and to the flow of labor, financial and material resources among various sectors of the national economy.

An analysis of conversion must therefore address four central questions:

First, is demilitarization of the Soviet economy a populist exercise (pursued as simply another campaign of political propaganda), or is it a process firmly grounded in the very core of the Soviet economy?

Second, will conversion have a significant positive impact and give Soviet society to feel its tangible benefits? Or will its implementation be fraught with predominantly negative consequences?

Third, what are the real prospects for conversion in an economy already beset with grave shortages and problems? Will implementation of this government program not prove to be yet another utopian, unrealizable plan?

Fourth, what is the interrelationship between conversion and reform? How will the transition from a centralized, planned economy to a market economy affect the substance, method of preparation, administrative mechanism and realization of the program of conversion?

2. MACROECONOMIC PRECONDITIONS OF DEMILITARIZATION.

The objective necessity, terms and scale of demilitarization of the Soviet national economy do not derive from favorable changes in international relations, but above all are determined by the condition of the Soviet economy. Over the course of several decades, the development of the Soviet economy has followed the path of hyper-militarization. In effect, the economy was built around two, hypertrophically developed complexes: the military-industrial complex and the raw-material complex. These two sectors were combined with an extremely backward consumer goods and services, with an underdeveloped infrastructure, and with a large-scale but inefficient investment sector.

By the onset of the crisis that overtook the Soviet Union at the start of the 1990s, the Soviet economy was distinguished by the following characteristics, which determined the necessity and potential for its demilitarization.

2.1 Enormous Military Expenditures.

According to official Soviet figures, the outlay on defense in 1990 (excluding capital investment in military enterprises) amounted to 71 billion rubles. Other estimates run several times higher, as much as 20 to 25 percent of the GNP--approximately 190 to 230 billion rubles.¹

It is exceedingly difficult to compare the magnitude of military expenditures in the Soviet Union and United States, not only

¹ Literaturnaia gazeta, 11 July 1990.

because of the differences in the method used for their calculation, but above all because of the fundamental differences in prices on production factors (land values, wage levels, etc.) As a result, the correct exchange rate of the dollar and ruble in the military sphere remains unclear. Soviet sources cite data showing that the production of aviation goods cost five to six times more on the world market than they do in domestic rubles.² For example, tentative estimates show that, to manufacture the supersonic passenger aircraft "Gulfstream IV-SU" (capable of transporting 50 passengers and with a range of five to eight thousand kilometers), it costs 6 to 8 million rubles in the USSR, but at least 40 to 50 million dollars if manufactured abroad.³ Therefore in this case the exchange rate is 6 dollars to the ruble.

If one accepts this exchange rate to calculate Soviet defense expenditures, the result is a military budget of 350 to 420 billion dollars. The CIA's detailed analysis of Soviet military expenditures, based on the American costs of producing analogous military equipment, gives a somewhat lower estimate of the Soviet defense budget in dollar terms--approximately 300 billion dollars (1987). That estimate assumes an exchange rate of 4 dollars for each Soviet defense ruble. If one takes into account that, according to official figures, the Soviet national income is 64 percent of the

² Voprosy ekonomiki, 1991, no. 2, p. 29.

³ Mezhdunarodnaia zhizn', 1990, no. 4, p. 99.

American national income,⁴ it is perfectly obvious that the defense burden weighed far more heavily on the Soviet economy than on its American counterpart.

Enormous military expenditures are simply no longer possible for a country like the USSR, which has a large internal and foreign debt. It has the largest budget deficit of all leading world powers (if measured in proportion to its GNP). According to available estimates, in 1990 the USSR had an internal debt of 530 billion rubles and foreign debt of 34 billion rubles.⁵ In recent years the government has fallen ever deeper into debt; it is now on the verge of bankruptcy.

Under these circumstances, a substantial reduction in military expenditures seems inescapable. That is all the more true when one takes into consideration the massive poverty and deprivation now found in the USSR: the alternative to demilitarization--financing economic recovery by a further reduction in the standard of--would be profoundly morally wrong and politically dangerous.

2.2 The Largest Army and Military-Industrial Complex in the World.

Soviet publications do not contain data on the production of various kinds of weapons. Foreign sources, however, do contain data (possibly inflated) on the production of the most widespread

⁴ Narodnoe khoziaistvo SSSR v 1988 g. (Moscow: Statistika, 1989), p. 68; the statistical yearbook for the next year (1989) has not yet appeared. A number of publications, indeed, concede that this figure is probably exaggerated.

⁵ Perekhod k rynku. Kontseptsii i Programma (Moscow, 1990), pp. 17-18.

types of weapons in comparison with the United States.. Table 2.1 provides comparative data for weapons production by the United States and Soviet Union in 1989.⁶

Table 2.1 Weapons Production by the USSR and USA (1989).

Item of Production	USSR	USA
Tanks	1700	725
Bombers	665	470
Helicopters	400	280
ICBMs	140	9
Submarine Missiles	100	21
Anti-Aircraft Systems	5	2
Submarines	9	6
Aircraft carriers	1	0
Cruisers	1	3

These and analogous figures for many other weapons categories testify to the predominance of the Soviet military-industrial complex over its American counterpart, at least in the quantitative

⁶ U.S. Department of Defense, Soviet Military Power 1990, 9th ed. (September, 1990), pp. 38-39, 61.

output of military hardware. To this should be added what are apparently more reliable data on the launching of space satellites. Whereas in the mid-1960s both the USA and USSR launched approximately equal numbers of satellites (about eighty per year), over the next quarter century the Soviet launchings rarely fell below ninety per year, at a time when the United States remained at a lower level of some twenty per year.⁷

The number of people serving in the Soviet military amounts to approximately four million--roughly speaking, twice the size of the American armed forces. According to CIA estimates, the fixed capital of the Soviet army amounted to 1.2 trillion dollars in 1982 (or 300 billion rubles, if the 4:1 exchange ratio is adopted). That is approximately one third of the capital stock of non-productive sectors of the USSR.

This enormous army and its military industry devours the best human resources and vast stretches of land area. To keep operating, it requires enormous quantities of fuel, food, metal and other resources. And it wreaks enormous harm to the environment. The foregoing all suggest that militarization of the country is one of the main reasons for the impoverishment of the Russian Federation, where 82 percent of Soviet military-industrial resources are concentrated.⁸

⁷ FOOTNOTE IS MISSING HERE: FOOTNOTE "I" IS CITED TWICE IN THE TEXT.

⁸ Pravda, 19 November 1990.

The above data, approximate though they may be, clearly testify to the enormous potential for reducing arms production in the USSR without, however, lowering its defense capabilities. Specialists will determine the precise scale of weapons' cutbacks. But the main point is the conclusion of a larger analysis: contemporary weapons, because of their very physical nature, are such that they obviate the traditional formula: the stronger a nation's defense, the greater its security.⁹ Therefore it is a great illusion to believe that national security is best served by seeking to overtake a competitor and to attain superiority in the production and stockpiling of weapons.

2.3 An accumulated backwardness in those economic spheres which are supposed to satisfy consumer needs.

This concerns a wide range of economic branches--agriculture, food-processing and light industry, the service sector, health, education, and housing, as well as those branches of machine-building which service the former. The enormous failure to deal with a wide range of social problems (ecology, nutrition, health, housing and other social services) resulted in a high mortality rate and low life expectancy of Soviet citizens--including, of course, those who serve in the Soviet military or work in its defense plants (as well as their family members). Compared with the citizens of Japan, the United States and other developed

⁹ Novoe myshlenie i voennaia politika. Materialy dokladov mezhdunarodnoi nauchnoi konferentsii (Moscow, 1989), p. 133.

countries, Soviet citizens have an inferior standard of living, a quality of life that is several times lower, and they face the prospects of a life expectancy that is seven to eight years shorter.

Under these circumstances, society is neither able nor willing to tolerate an economic policy that gives first priority to defense--at the expense of social needs.

2.4 Inevitable technological backwardness in the army and military-industrial complex.

This is an ineluctable consequence of the generally unfavorable condition of the economy with respect to technological progress. The Soviet Union has apparently reached the point where sustaining a high level of military might by the traditional extensive methods is incompatible with a catastrophic technological backwardness in other sectors of the economy.

According to data in the Defense Department's study, Soviet Military Power 1990, the USSR holds the lead in only four out of thirty one weapons categories (chemical weapons, ground-to-air missiles, ballistic missiles and anti-satellite). By contrast, the United States holds first place in seventeen categories (including bombers, submarines, helicopters, etc.) Soviet specialists affirm that, in many areas of military technology, the Soviet Union lags some five to seven years behind the rest of the world.¹⁰

¹⁰ Voprosy ekonomiki i konversii, 1990, no. 4, p.9.

The Persian Gulf War has perhaps led to some corrections in these assessments. Nevertheless, the new data still confirm that the technological level of Soviet weaponry is inferior to foreign analogues in most categories.

That conclusion will come as no surprise if one takes into account the fact that only four percent of the new products in Soviet machine-building are superior to foreign counterparts.¹¹ However much the defense sector might try to sever its ties with other industrial branches and to supply its own materials and parts, it could never achieve such total self-sufficiency. Hence it bears too the mark of Cain, belonging to the general system of a central planned economy.

Thus the development and condition of the military-industrial complex and army bear so fundamental a trait of the Soviet economic system as its hostility to innovation.¹² Although this aversion to technological progress perhaps does not extend directly to the defense sector, it does permeate its immediate environment and ultimately has an indirect impact on the military-industrial complex itself.

The military-industrial complex, for its part, generates technological backwardness in the Soviet national economy. For example, V. Avduevskii (chairman of the Soviet National Committee on Assistance to Conversion) estimates that the Soviet Union is

¹¹ Narodnoe khoziaistvo SSSR v 1989 g., p. 308.

¹² V. Fal'tsman, "Vospriimchivost' ekonomiki k nauchno-tekhnicheskomu progressu," Planovoe khoziaistvo, 1989, no. 4.

some fifteen to twenty years behind the West in computerization, and he attributes that specifically to the fact that the military-industrial complex has devoured the basic resources to achieve its special goals. "But the backwardness in general computerization of the national economy inevitably had a negative effect on the level of electronics development in military industry. In this sector, I believe, the expenditures have already traversed the critical point, which in turn is followed by [increasing] backwardness."¹³

The Soviet Union similarly has an antiquated system of transportation and communication, which lags behind not only the developed countries, but even many developing nations. This backward sector, as a result, fails to satisfy the needs of the civilian population and causes endless disruptions in industrial and commercial communications, entailing enormous losses. At the same time, this backwardness in transportation and communication has also impaired the Soviet Union's defense capabilities. True, the defense industry and army seek to develop their own communications, with special channels and equipment, airports and aircraft. Nevertheless, the defense sector cannot become totally autonomous from the poorly developed network of roads, from the overloaded railways and other shortcomings in the Soviet infrastructure.

An analogous situation is to be found in the sphere of capital construction. On the average, it requires 13.5 years to construct a machine-building plant in the Soviet Union and, because of the inferior quality of construction goods, it takes another two to

¹³ Za rubezhom, 1989, no. 33, p. 1.

three years to reach full capacity operation. The contrast with Western countries could hardly be more striking: as a rule, it takes no more than two years to construct an analogous plant, with no additional time being required to attain full capacity production. This length of investment lag inevitably affects the defense industries, where machine-building predominate. Under such conditions, capital construction can nullify any achievements in the area of technological progress not only in the civilian, but also in the defense sector of the economy.

To overcome this problem, the military sector has created its own construction organizations, which are able to build faster and better than their civilian counterparts. However, here too it is impossible to attain complete autonomy and to isolate the military-industrial complex from the rest of the national economy.

All this leads to the conclusion that the country has attained a maximum level of armaments, beyond which it can expect not growth, but a decline in the level of national security.

2.5 Development of the Economy according the Principle of a Closed System with a Specialized Structure of Foreign Trade.

Three-quarters of Soviet exports consist of raw materials, of which 40 percent come from fuel and electricity.¹⁴ These exports constitute the main source of hard currency, which are needed to finance the import of many types of equipment (in the first in-

¹⁴ Narodnoe khoziaistvo SSSR v 1989, p. 664.

stance, for the military-industrial complex) as well as consumer goods and food products. However, the raw-material sector of the economy is no longer able to sustain a high level of exports. Conversion creates an opportunity to reduce this import and, in the future, possibly to replace the export of raw materials with manufactured goods. To be sure, implementation of this program - by becoming competitive and active on the world markets - is an exceedingly complex matter. (A far simpler path, for example, would be to reduce food imports by increasing domestic production to the necessary levels.)

The machine-building sector provides about 16 percent of Soviet exports. So far as the published data allow any conclusions to be drawn, this consists chiefly of weapons.¹⁵ However, at the present time the international market for arms has been sharply reduced.

In the literature one finds occasional suggestions for a variant in conversion plan that is based on increasing arms sales on international markets and thereby obtaining the hard currency to finance the acquisition of the needed goods for the civilian sector.¹⁶ It is possible that this approach would be the most economic for the defense sector and for the national economy. However, even if this is feasible in the present international

¹⁵ According to Western estimates, Soviet arms exports amounted to 11.6 billion rubles in 1989 (Moskovskie novosti, 1990, no. 28). That would comprise 16.9 percent of the total volume of Soviet exports.

¹⁶ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 12.

situation, the plan to get rich by selling arms in areas of current or future conflicts provokes mounting protests from Soviet public opinion. Indeed, more and more frequently one hears demands to prepare an international convention on arms sales, which would sharply reduce militarization around the globe.

Thus the Soviet national economy faces a fundamental choice. On the one hand, the government could opt to keep its economy isolated, reducing the export of oil and other raw materials as well as weapons; it would have to make corresponding cutbacks in imports. The alternative is to increase exports (for example, by developing commercial ventures in space and by tapping the raw materials and goods freed through conversion as well as high-quality civilian production from the military sector of the economy).

An examination of the five key characteristics of the Soviet economy show clearly that the Soviet Union has long since reached the point where it is essential to reduce the army and weapons production and to divert part of these resources from defense industries to civilian purposes.

At the present time, as K. V. Frolov (vice-president of the Academy of Sciences) and V. S. Avduevskii have correctly observed, the process of conversion should not depend upon the existing arms reduction agreements, but should be a independent process that frees the national economy from the intolerable burden of military expenditures.¹⁷

¹⁷ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 12.

The presence of objective preconditions that determine the inevitability of a radical demilitarization of the Soviet national economy does not at all connote a uniformly positive impact on the growth of all macroeconomic indicators. On the contrary, demilitarization threatens the country's innovation potential and inevitably leads to a slowdown in economic growth and the liquidation of a part of the accumulated wealth. We shall now examine the possible impact of demilitarization on various macroeconomic indicators.

3. TECHNOLOGICAL PROGRESS AND INNOVATION POTENTIAL.

Approximately three-fourths of all technological progress and innovation potential in the USSR is concentrated in the military-industrial complex. It is therefore proper to ask whether a cut-back in expenditures in this sector will not lead to a decline in the Soviet capacity for innovation and--by extension--lead to a fall in the growth of labor productivity.

According to the "State Plan for Conversion of Defense Industries in the USSR," the expenditures on R&D for defense will be reduced in 1995 by 15 percent in comparison with the outlays for 1988. But the general expenditures on R&D in the military-industrial complex will remain virtually on the same level, because the volume of projects for civilian purposes will be increased by 41 percent. Moreover, the share of civilian R&D will increase from 25.2 percent (28.5 percent according to some sources) in 1988 to 40.5 percent in 1991 and to 47.6 percent in 1995.¹⁸ Insofar as the total volume of expenditures for R&D in the defense sector is not reduced, it is possible to keep the number of those employed at scientific research institutes and design firms at the same level.

To be sure, under these conditions the diversion of one-fourth of all scientists and designers from defense to civilian projects will lead to a partial devaluation of accumulated experience and knowledge. That will thus entail a partial loss of the scientific and technical achievements and intellectual capabilities because of the special difficulties of a conversion of knowledge from military

¹⁸ Voprosy ekonomiki i konversii, 1990, vyp. 4, pp. 37, 57.

to civilian application. Will all these losses not have an effect on the efficiency of the Soviet economy?

It is generally well-known that developments in the defense sector contributed to technological progress in the civilian sector. To cite only two striking examples: the development of nuclear weapons also led to the peaceful use of atomic energy, and R&D in military aviation had direct spinoffs in the production of civilian aircraft. Defense industries have also contributed to their civilian counterparts in many other ways, including the use of integrated circuits, methods of ultrasonic welding, high-precision manufacturing, as well as many other methods.

The spinoff-process had much less impact in the USSR than in the United States and other Western countries. On the one hand, the Soviet Union lacked formal mechanisms to facilitate the transfer of results of military R&D to the civilian sphere, and, on the other, breakthroughs in defense technology were barred from civilian use by an unjustified mania for secrecy. Already in the 1970s have leading scientists in the Academy of Sciences emphasized the need to transfer developments in the defense sector to the civilian economy. But no decisions were taken, even though no more than 5 percent of the developments in the military-industrial complex deserved to be categorized as "secret."¹⁹

This secrecy has entailed heavy economic costs. Thus, when development of the West-Siberian petroleum fields required transport vehicles with a high capability for traversing rough terrain,

¹⁹ Inzhenernaia gazeta, 17 October 1990.

the military failed to supply information about developments that they had already made in hovercrafts. The government has now decided to establish an "all-Union Foundation for the Conversion of Innovation." This should lead to a radical improvement in the transfer of scientific and technological developments from defense to civilian industries.

Yet even countries that have long had such mechanisms for the technology transfer have found that expenditures on military R&D not only fail to stimulate, but even retard scientific and technical progress in the civilian sector. The latter begins to decline, shows a slower rate of growth in productivity, and lose their competitiveness. That is the conclusion of Western specialists who have analyzed why the United States lost its dominance in the automobile and electronics industries and why it shifted from a favorable to negative balance of trade in high-tech production.²⁰

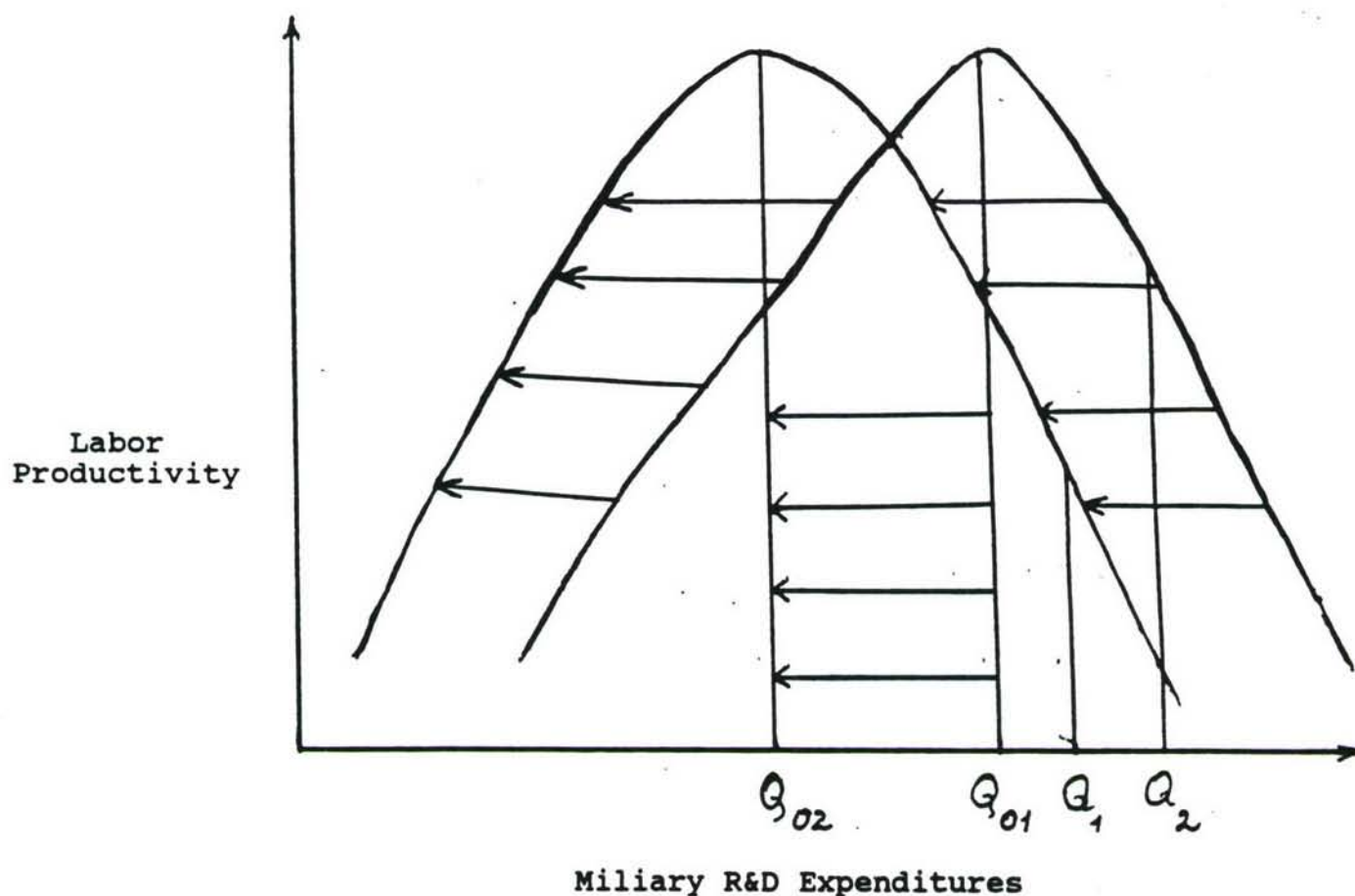
The principal reason for this deleterious effect of the military-industrial complex on the civilian sector is apparently to be found in the widening gap between the demands made on military and civilian technology. Thus the requirements set for warplanes (in particular, their speed) far exceed what is required for civilian aviation. Likewise, the demands on computer speed, memory size and programming are very different for running an industrial plant as opposed to missile guidance: the scale and speed of calculations are radically different. Similarly, whereas civilian equipment

²⁰S. Melman, "Ekonomicheskaiia al'ternativa gonke vooruzhenii," SSha: ekonomika, politika, ideologiiia, 1987, Nos. 4-5.

places a premium on durability, it would be uneconomic to make such a demand on weapons systems whose life-span in active service is calculated in terms of hours, minutes or even seconds.

Taking all the above into account, one can suggest the existence of the following theoretical relationship between the magnitude of expenditures on military R&D and efficiency in the national economy (see Figure 1). The growth in expenditures on defense development can, up to a certain point, induce a growth in labor productivity. Theoretically, however, there must be a certain optimal point beyond which the expenditures on defense R&D will cause labor productivity to fall. With time, this reverse U-curve and its optimal point shift to the left, as the arrows in Figure 1 show. Therefore one can suggest that the expression $Q_{02} > Q_{01}$ is a valid statement for tendencies over a substantially lengthy period of time.

Figure 1. Theoretical Dependence of Productivity on the Scale of Military Expenditures for Research & Development.



Note: It can be assumed that every country, at a given stage in its development, has a certain volume of military spending which determines maximum productivity. For the USSR this optimum has long since been exceeded; hence the growth in military expenditures reduces productivity. In time (see the direction of the arrows), the optimum level of military spending moves to the left ($Q_{02} < Q_{01}$), but the military outlays move to the right along the access of the x-coordinate ($Q_2 > Q_1$). The gap between the actual and optimal military expenditures increases thus: $(Q_2 - Q_{02} > Q_1 - Q_{01})$.

The expenditures for military R&D have, evidently, long since surpassed their optimal level. Moreover, whereas the optimal level of spending on military R&D (defined in terms of overall productivity) in time should be reduced, historically we find that the spending level actually tends to rise. Thus, according to the data of A. S. Becker, between 1960 and 1989 expenditures on military R&D actually increased by 2.9 times in the USSR and 1.25 times in the United States.²¹ As a consequence, military spending on R&D that would result in the maximum productivity has increasingly surpassed the optimal level in both the Soviet Union and the United States. The result is a decline in efficiency in the national economy of both countries. By contrast, the expenditures on military R&D in Japan and Germany are possibly below their optimal level. But both countries make broad use of developments in the United States and in other countries, which in turn makes it possible to increase productivity.

From the above it can be concluded that the Soviet conversion plan for the next five years will not undermine innovation potential of the USSR, but rather will contribute to its growth--not to mention the consequences of its social reorientation.

Although the growth in innovation capacity will in time lead to an increase in productivity, the initial effect of conversion nevertheless will be to reduce the GNP and the national income. The inevitability of such a reduction obviously ensues from the

²¹ Abraham S. Becker, Sitting on Bayonets: The Soviet Defense Burden and the Slowdown of Soviet Defense Spending (Los Angeles: Rand-UCLA, 1985), pp. 4, 13.

curve of transformation or production possibility. According to the operation of this curve in a deficit economy (where resources are completely consumed), the choice between civilian and military production is determined by the following law. To produce more butter with a given volume of resources and a given technological level, one must cut back the production of guns. And, in accordance with the law of rising costs and diminishing returns, each incremental unit of butter will be increasingly costly in terms of the additional cutbacks in the production of guns.

To be sure, this progressive fall in production could be averted if the production of butter and guns could utilize all the productive resources in absolutely equal proportions. That is to say, the decline would not occur if the productive capacities of defense industries and their existing personnel could use these very same raw materials to produce consumer goods. That would mean the so-called "production for dual purposes," and in this case conversion would require no changes in production, only in the utilization of existing productive capacities.

As an example of such dual-purpose production one could cite the manufacture of components in the electronics industry: these components could be used equally in defense or civil industrial production. Likewise, the output in a number of other branches in the defense sector could have a similar dual-purpose applications. The problem, however, is that the bulk of defense production cannot be efficiently used in the civilian sphere, since even seemingly similar goods (airplanes, computers, etc.) have very different

specifications for the military and civilian sectors, as explained above. And there is simply very little that can be done to narrow the gap between these specifications mandated in the two sectors. The same problems emerge in civilian utilization of decommissioned weapons and other military property.

4. EFFECTS OF CONVERSION ON MACROECONOMIC INDICATORS OF THE ECONOMY.

4.1 Volume of production and capacity in the military industry.

In mid-1989, when the utilization of decommissioned weapons and other military hardware and the methodological principles of the state conversion plan were still being elaborated, the government made it a cardinal rule that conversion should not substantially reduce the productive capacity of defense enterprises. According to the authors of these basic principles, the increase in civilian production should fully compensate for any reduction in defense production. The adoption of this principle can be explained by several circumstances: (1) the authors' ignorance of the transformation curve and the economic law of diminishing returns, which are not to be found in Soviet economics texts (in contrast to American textbooks); (2) the state directive to enterprises to implement conversion "without interrupting production"; (3) an exaggerated estimate of the share of dual-purpose goods in the output of the military-industrial complex; and, (4) a relatively modest reduction in the production of military goods (20 percent) alongside a significant increase in civilian goods (80 percent) over the next five years. However, an increase in civilian production at the new productive capacities of defense plants can only be achieved if there is an increase, not decrease, in the total volume of production.

However, as the result of the first two years of conversion work in the military-industrial complex have shown, one cannot avoid the disturbing conclusion that "it is not possible to replace completely, in monetary terms, the lost volume of military goods."²² Indeed, an analysis of 44 defense plants in 1989-1990 revealed that the additional output in civilian goods covered only one-fourth of the drop-off in the production of military goods. The smaller scale of production, by extension, meant as well a decline in profitability. Thus, if 1990 is compared with 1988, profitability fell by 2.4 percent in the Ministry of General Machine-Building, 3.4 percent in the Ministry of Aviation Industry, and 6.7 percent in the Ministry of Defense Production.²³ Moreover, the specific reasons for the decline in profitability were to be found in the forcible expansion in the product mix of unprofitable civilian goods, the reduction in utilization of productive capacities unsuitable for partial conversion, the formation of enormous reserves of materials and goods, the reluctance of some enterprises to cut their workforce even when labor intensity had been reduced.

4.2 Financial variables.

The fall in the volume of production and in its level of profitability inevitably entailed a decline in the revenues and profit in the military-industrial complex. And that in turn mean a fall in the GNP, the national income, and the revenues of republic and union budgets. Moreover, under the mantle of implementing conver-

²² Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 18.

²³ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 66.

sion, many defense enterprises were given permission by ministries to reduce their payment to state budgets. In short, conversion thus contributed to the fall in GNP, which, according to official figures, declined some 2 percent between 1989 and 1990 (or 9 percent, according to the calculations of Vladimir Fal'tsman).

The state conversion program thus foresees a decline in its budgetary income from the defense sector. It is possible to assume, however, that in the future this loss will be covered. As has already been pointed out, production of consumer goods is supposed to increase faster than the fall in military goods. Moreover, each percent of increased output in consumer goods of "group B" in the total volume of production yields three times as much in budget revenue (through profits and the turnover tax) as from producer goods of group A. If conversion would proceed as planned, losses of budget revenue would soon be recognized.

4.3 Capital stock and national wealth.

Conversion inevitably leads not only to a fall in the current production, but also to a decline in the national wealth of the Soviet Union that has been accumulated over previous years. Specifically, national wealth shall be diminished by the partial loss of weaponry and military property, by the depreciation of the capital stock of the defense industry, and by the fall in the utilization level of capacities that have been producing goods for the defense industry. Simultaneously, there will be a sharp rise in non-liquid

inventory of goods and raw materials (for which no alternative use can be found) as well as the number of uncompleted military construction projects. The accumulated knowledge and educational capacity of the country will also suffer an appreciable decline.

It is important to attempt, if only in approximate terms, to estimate the possible scale of reduction that defense conversion will have on several components of national wealth.

To calculate the capital stock of the Soviet armed forces, we shall use the data on Soviet military expenditures (as given in A. Becker) and the perpetual inventory method (as used by R. Goldsmith) to estimate national wealth. We shall make two assumptions: (a) that the average term of service of capital stock in the defense industry is 15 years; (2) that one-half of the military expenditures is used to build up the capital stock (as was the case in 1990). In this case, the accumulated wealth in property and material at the outset of conversion 500 billion rubles, or about one-fifth of the entire capital stock of the USSR. (This number is adjusted for depreciation and does not include the value of land used by the Soviet military.)

Let us assume that the reduction in arms and defense property will proceed in direct proportion to the reduction in the number of armed forces. In addition, it is important to bear in mind that the people in the present reduction is aimed above all at the most expensive types of offensive weapons: 60 missile formations, 2 aviation formations, as well as 4 aviation divisions, 26 subma-

rines, 45 warships. In addition, army formations (voiskovye soedineniia) are to be restructured so as to have a more defensive character, which will mean a 40 percent reduction in the number of tanks and armored divisions and a 20 percent reduction in the number of tanks attached to tank divisions. In addition, tank regiments will be reformed into motorized rifle regiments. The land forces are being cut by 24 armored and tank divisions.²⁴ Therefore proposed hypothesis will probably underestimate the value of weapons and property released through conversion.

If this hypothesis is used to estimate the lower limits of converted military equipment and property, then in accordance with the planned reduction of 500,000 people in military service (one-eighth of all those in service), the value of military capital stock affected by conversion will equal approximately 63 billion rubles in national wealth (500 billion rubles \div 8 = 62.5).

To calculate the net loss of national wealth through conversion of productive capacities in the defense industry, we shall rely upon the following data. According to one estimate, the proposed diversion of 20 percent of all military capacities for civilian production will yield 17 billion rubles of capital stock for use in the non-military sector.²⁵ According to later data, conversion will make available for consumer production a capital stock that is valued at 3 to 4 percent of the entire volume of the Soviet

²⁴ Mezhdunarodnaia zhizn', 1989, no. 8: 3-13.

²⁵ Voprosy ekonomiki, 1989, no.6, p. 52.

Union's industrial capital stock.²⁶ This represents about 26 to 35 billion rubles.

To estimate the magnitude of capital stocks in the Soviet defense industry, we shall operate on the basis of a medium figure - 25 billion rubles - as the value of capital stock freed through conversion for civilian utilization. In that case, the entire capital stock of the defense industry would comprise approximately 125 billion rubles. This estimate is quite realistic: it would assign the military-industrial complex about half of the capital stock in the machine-building complex.²⁷

As a result of conversion of capital stock in 1989-1990, only 62 percent will be used for production of civilian goods, the remaining 38 percent will be written off or mothballed.²⁸ These data therefore show that the magnitude of loss in capital stocks from the military industrial complex will represent only 48 billion rubles (125 billion rubles x 0.38 = 47.5 billion rubles).

For practical reasons, the capacities shifted to civilian production cannot be fully utilized. The rate of capacity utilization in 1989 stood at 13 percent and in 1990 at 27 percent. If one assesses the national wealth in terms of expenditures, then the reduced utilization of these capacities and utilization of the defense industry capacities excluded from conversion do not have

²⁶ Literaturnaia gazeta, 9 May 1990, p. 15.

²⁷ The capital stock of the entire machine-building complex comprised 247 billion rubles in 1989. See Narodnoe khoziaistvo SSSR v 1989 g., p. 347.

²⁸ Voprosy ekonomiki i konversii, 1990, vyp. 4, pp. 68-69.

any effect on the magnitude of wealth. In fact, the value of capital stocks as accumulations of past expenditures does not change as a result of their diminished utilization. But if one makes an assessment of the elements of wealth as income-producing factors, then the deteriorating yield of the capacities reduces the value of the capital stocks.

Let us say that the converted defense capacities (as we have already calculated) represent 25 billion rubles. If they are utilized only at a level of 25 percent, the loss in wealth comprises 19 billion rubles ($25 \text{ billion rubles} \times 0.75 = 19$).

Thus the total value of losses to accumulated capital (excluding the growth in unwanted material stocks, uncompleted construction and devaluation in knowledge) comprises approximately 130 billion rubles ($63 + 48 + 19 = 130$). This is approximately 7 percent of the entire producer capital stocks in the USSR. The further the Soviet Union moves along the path of disarmament, the greater these losses will be.

This calculation takes into consideration the impact of conversion on national wealth, but it does not reveal its effect on the improvement in the utilization of capacities for civilian production (whether in defense plants or in enterprises belonging to civilian machine-building). This improvement will be the result of redirecting metal and other resources to those enterprises which, from the late 1970s, had experienced a declining coefficient in capacity utilization because of the shortfall in the delivery of these resources.

The magnitude of the loss in national wealth will be substantially smaller if the converted universal machine-tools, other equipment and military property can be put up for sale on the domestic or foreign markets, and if the balance can be used as a source of valuable secondary raw materials (especially for metallurgy).

Unfortunately, the Soviet Union does not have capacities for processing significant amounts of secondary raw materials from large-scale scrap. At the present time, a government program is being prepared for the industrial utilization of military-technical resources, but its implementation will enable the Soviet Union to create this new industrial sector only in 1996-2000. In the interim the following methods are being used to utilize the property, machines and equipment withdrawn from the defense sector: (1) accumulation (in military units and in storage) of unserviceable military equipment and weapons, which form the basis of a fictional wealth; (2) physical destruction, such as blowing up missiles, silos, etc.; (3) sale to foreign firms, which is not proscribed by existing law.

As the experience of other countries has shown, the costs of liquidating weapons can exceed the income from their scrap value. According to the calculations of Hungarian specialists, it costs between 4,000 and 12,000 dollars to dismantle a tank.²⁹ Huge

²⁹ T. Palankai, Conversion: The Hungarian Case Prospects and Problems in the Late 1980s and Early 1990s.

additional sums will also be required to eliminate buildings and other military structures. The conversion of sites connected with radioactive materials will require a protracted and expensive deactivation and cleanup. Thus, according to the U.S. Department of Energy, the costs of cleaning up the sixteen main nuclear-weapon plants and bringing them up to current legal standards, over the next half-century will run between 66 and 100 billion dollars.³⁰

The State Conversion Program does not include estimates of the expenditures needed to liquidate that part of the national wealth, which is slated to be destroyed as a consequence of the demilitarization of the national economy.

Calculated in terms of per capita, in 1989 the national wealth of the USSR (excluding natural resources and non-material wealth) amounted to 15,000 rubles. That is approximately equivalent to the average worker's wage for an eight-year period. The decline in national wealth, because of conversion, will therefore entail a per capita loss of approximately 500 rubles. Will that not imply an impoverishment of the Soviet people? Should one therefore not argue in favor of a cessation, or slowdown, in demilitarization?

Not at all: one should treat this property just as any other capital stock that has become obsolete. The sooner one is rid of them, the more effective the results. In the final analysis the country will be freed of the necessity to maintain unprofitable

³⁰ G. Bischak, "Economic Conversion and Diversification Strategies for the Nuclear Weapons Complex," The New Economy, vol. 1, no. 1, August (September??) 1989.

capacities and superfluous property, to waste resources to maintain them and keep them operating.

As a consequence of conversion, the national income, GNP and the national wealth of the USSR will not increase, but rather decrease in the first stage. Simultaneously, however, there will be improvements in the structure of macro-indicators as well as in the quality and social utility of economic growth. As military expenditures are reduced, the standard of living will rise not only because of higher productivity, but also through a more rational distribution and utilization of national income and the GNP. According to the calculations of A.G. Aganbegian, under the existing productive potential and productivity of the USSR, the standard of living could be 50 percent higher if the outlays for consumer goods and social services were increased by cutting the military budget, the growth of business inventories and investments (which, cumulatively, consume more than half of the national income).³¹

It is precisely for this reason that conversion became one of the most popular measures in the current array of Soviet economic reforms and constituted part of the campaign program of many candidates in the last elections. What social consequences can realistically be expected from the implementation of conversion?

³¹ Izvestiia AN SSSR, Seriiia ekonomicheskaiia, 1990, no. 6, p. 130.

5. THE SOCIAL CONSEQUENCES OF CONVERSION.

The social consequences of conversion in the USSR are formed under the contradictory pressures generated by an enormous backlog of unsatisfied social demands, on the one hand, and the limited capacities of the military-industrial complex, on the other. Moreover, the positive consequences of conversion are also accompanied by negative effects. Reconciliation of the contradictions in conversion, for the moment, can only be analyzed in terms of the expectations incorporated in the conversion program and its implementation.

The possible utility of the program as a source of information on the social consequences of conversion is, of course, quite limited. And not only because one finds here wishful thinking in lieu of what is realistic. It is, rather, a problem that the program lacks an objective balance of the negative and positive consequences of conversion. The primary attention is directed toward its goals; far less attention is accorded to such related problems of conversion as the changes in employment, residence, structural and local unemployment--especially in small towns closely linked to the military production.

Nevertheless, those employed in the defense industry are becoming increasingly discontented.³² By the mid-1990 more than 70,000 employees had already moved from the defense sector to other branches of the national economy.³³

³² Voprosy ekonomiki, 1991, no. 2, p. 21.

³³ Pravda, 6 June 1990.

5.1 Goals of conversion program and their evolution.

Planning for conversion proceeded simultaneously with the formation of public opinion on its objectives. Numerous publications expressed intuitive wishes as to its future social goals and consequences, including:

- * saturation of the internal market with manufactured goods for the consumer
- * large-scale participation in international markets, including manufactured goods (in sharp contrast to the traditional foreign-trade patterns of the USSR)
- * raising of non-military machine-building to a qualitatively new level, the objective being to re-equip the national economy and to attain a sharp increase in industrial efficiency
- * computerization and creation of information networks ("informatizatsiia") of society
- * financial recovery and reduction of the deficit in the state budget

Thus the military-industrial complex was assigned tasks that the entire Soviet economy had failed to achieve over the last seventy years. To be sure, if these goals were scaled out over time, if immediate, mid-range and long-term priorities were defined and the center of gravity shifted to a more remote point, then the complex of desired social consequences would appear more realistic. But in this case one can only speak of a further gigantic growth of the

military-industrial complex, even if it were now reoriented toward the production of civilian goods. This last circumstance, evidently, played a considerable role in determining the posture of the leadership in the military-industrial complex, which hoped that conversion would lead to a new injection of capital investment.

To be sure, there were other reasons for the lack of open opposition to conversion in the Soviet Union. For example, the heads of Soviet industry--in contrast to the United States and other Western countries--simply do not possess autonomy and independence from the state. Hence there was no chance for overt opposition to the government's decisions in the sphere of disarmament and conversion, which came like a bolt from the blue for many of defense enterprises. The only prospects for those who risked outspoken criticism of the government was immediate dismissal, loss of power, prestige, privilege and material advantages.

On the contrary. amazing though this may at first appear, the heads of the military-industrial complex not only displayed no opposition to disarmament and conversion, but from the very outset actively supported this policy--indeed, they supported implementation of the maximum possible social goals. The chairman of the State Military-Industrial Commission, I. S. Belousov, formulated ten fundamental thrusts of conversion: (1) equipment for the agro-industrial complex; (2) equipment and machinery for light industry; (3) tools and machinery for trade and restaurants; (4) consumer goods; (5) medical equipment; (6) electronics; (7) computers; (8) communications equipments; (9) civilian aircraft; and, (10) passen-

ger and fishing vessels.³⁴ Leading this agenda for conversion production are the most acute, urgent needs so far as society is concerned--viz., food supplies, clothing, and various consumer goods. But it should be obvious that precisely these kinds of products were most remote from what defense plants were most prepared to produce.

The unequivocal support of the military-industrial complex for maximum conversion did not mean, however, a total absence of discussion, which in fact displayed two main lines of thought.

First, military-industrial leaders proposed to concentrate conversion on the production of high-tech civilian goods. This sector not only corresponded to the innovation potential of the defense industry, but represented a sphere in which it excelled. In addition, these leaders recommended that, in each enterprise, the civilian production to a large degree be technologically compatible with its military production. In this respect, they vigorously warned against a "frying pan" conversion, even if the public need for frying pans was particularly acute.

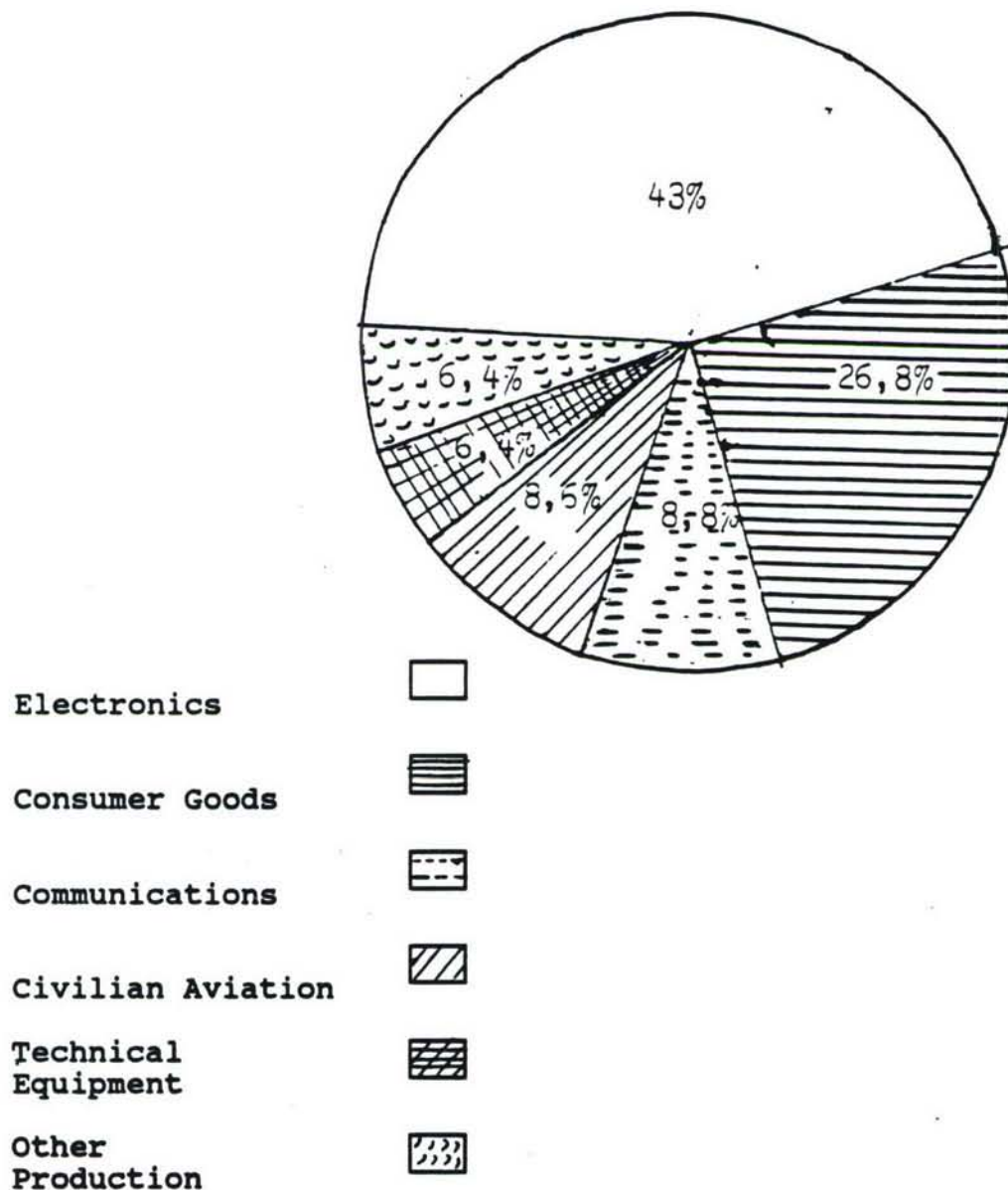
Second, people from the defense industry questioned proposals to cut back the expenditures on the Soviet space program. According to published data, the spending on space amounts to 6.9 billion rubles, of which over half (56 percent)--3.9 billion rubles--was directed toward military objectives. The cumulative economic effect of the space program already exceeded 12 billion rubles; the program is supposed to become self-financing by 1995. Such data,

³⁴ Pravda, 28 August 1989.

to be sure, require careful analysis by experts. However, even if the payback from space exploration proves more modest than claimed, there were good reasons to be cautious about reductions: destruction of the high innovation potential that has already been created in this sector--especially for a relatively small economic base - could inflict considerable damage to scientific-technological progress and the prestige of the Soviet Union.

A comparison of the first draft of the state conversion program with its final version shows that, in the course of one and a half years' discussion, the social goals of conversion underwent a substantial transformation to make them more compatible with the existing technological and scientific-technical capabilities of the military-industrial complex. Figure 2, which shows the distribution of capital investment among various spheres of conversion, supports this conclusion. As the diagram reveals,

Figure 2. Distribution of Capital Investment for Conversion Among Various Categories of Civilian Production.



Note: Top priority in conversion must be given to the development of electronics in the national economy. This priority is justified by the capacity of the military-industrial complex, but under the most favorable conditions reflects only scattered needs in the economy. Second place is held by the increase in consumer goods. In third place is the task of expanding transportation and communications. The production of technical equipment for manufacturing and light industry has, in the course of a single year, been shifted from top priority to a modest fourth place.

about a third of the capital investments in 1991-1995 is directed toward the production of goods which, with certain qualifications, do not fit the category of high-tech (consumer goods and technical equipment). Plans call for the remaining two-thirds of the investment to be used for expanding the production of electronics, communications, civil aviation and other high-tech civilian goods, including peaceful use of space, civilian ship construction and (in part) medical equipment.

The social priorities and objectives of the State Conversion Program are also reflected in its structure, which identifies seven all-union objectives. First, the Program calls for directing the defense resources freed through conversion toward several high-priority objectives: (1) civilian aviation; (2) civilian shipbuilding; (3) space program for scientific and economic development; (4) electronics, information networks and communications for economic development and international cooperation; (5) the production of promising new materials and compounds with a high degree of purity, fiber optic products, and electronics. Second, Conversion Program foresees two other spheres of production: (1) consumer goods (excluding food supplies); (2) civilian products, such as technical equipment. A more detailed description of these seven programs has been provided by the first chairman of Gosplan, V. Smyslov.³⁵

It should be noted that the search for the most efficient form of implementation has continued after the conversion program was promulgated. For example, it is now proposed to sell aircraft

³⁵ Voprosy ekonomiki, 1991, no. 2, p. 4.

engines abroad in order to earn hard currency, which will be used to purchase consumer goods. The argumentation in favor of this proposal emphasizes two factors: first, only three countries besides the USSR are capable of producing modern engines at a high level and adaptable to any aircraft; and second, Soviet engines cost five to six times more on the international market than at home (in rubles).³⁶

At the same time, some authors point out that the Conversion Program has an incomplete list of social objectives. In their opinion, the military-industrial complex could help solve the country's technological and industrial problems by increasing the production of automobiles, building up the engineering infrastructure, developing high-efficiency methods of housing construction, expanding the production of furniture and household appliances, improving the communication system, creating a decentralized system to protect the environment, laying a better technical basis for combatting crime, and helping to satisfy various other urgent social needs.³⁷

5.2 Assessment of the program objectives for consumer products.

An examination of the goals and priorities of conversion show that the needs of society and its social consequences are exceedingly heterogeneous, encompass virtually every dimension of improv-

³⁶ Ibid., p. 29.

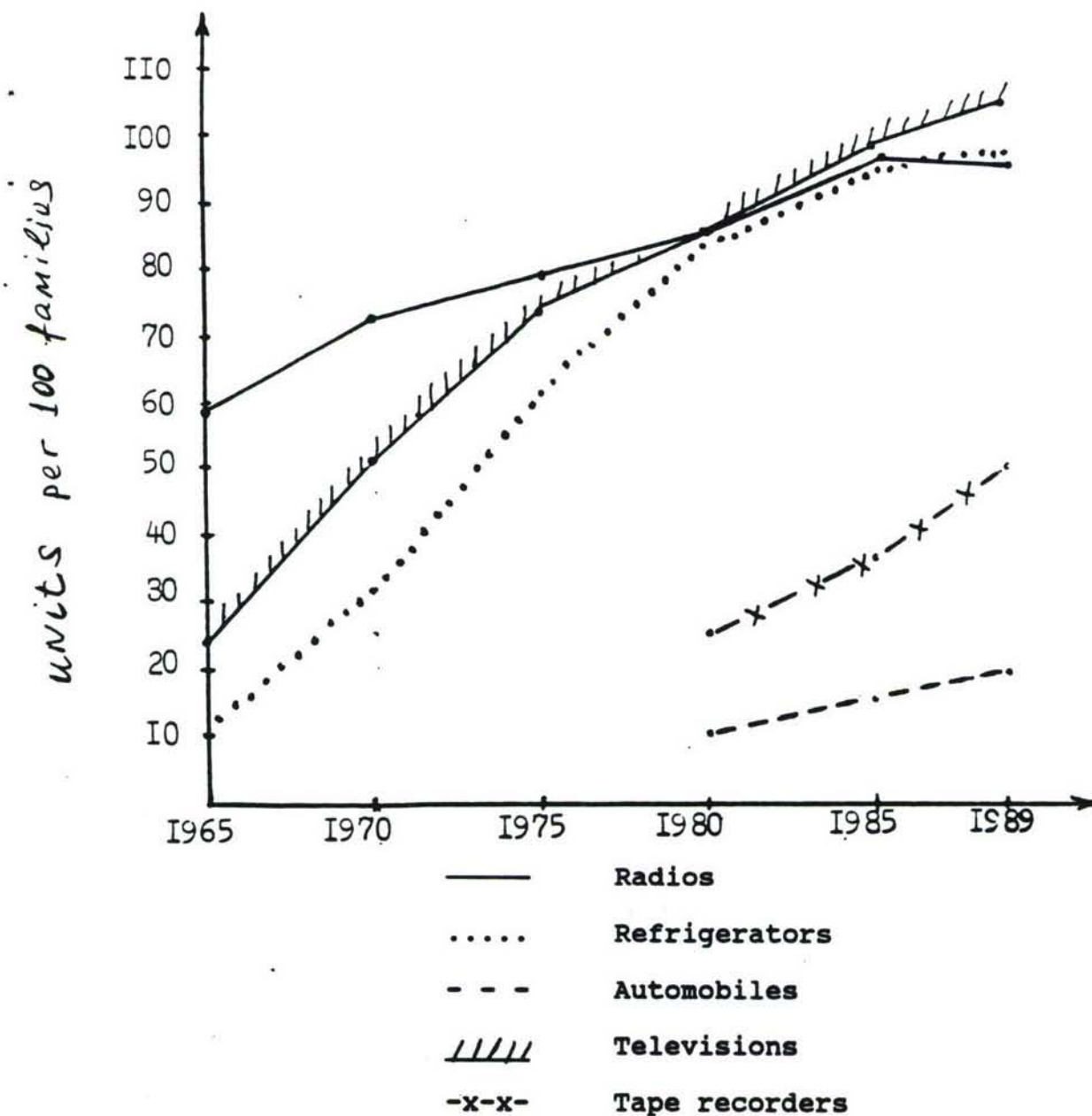
³⁷ Institut ekonomiki i prognozirovaniia nauchno-tekhnicheskogo progressa, Problemy prognozirovaniia, vyp. 2 (Moscow, 1990), pp. 24-25.

ing the quality of life, and significantly surpass the real capabilities of the military-industrial complex. To demonstrate the substantial gap between the immense demands of the Soviet market and the more modest potential of the defense sector, one can compare the supply and demand for selected consumer goods and technical equipment.

Figure 3 describes the saturation of the Soviet market with durable consumer goods. All these goods (except automobiles), traditionally, are produced in the USSR by firms in the defense sector. As the figure shows, in terms of the level of saturation, these goods can be divided into two main categories.

For the first group (radios, televisions, refrigerators), there is approximately one unit per family. It should not be inferred, however, that the market is therefore saturated. The low income levels of most citizens mean that Soviet families cannot have duplicate appliances and make a timely replacement of old, worn-out models. The rise in incomes in the second half of the 1980s led to an acute shortage of these goods--a shortage that had seemingly been overcome in the first half of that decade.

Figure 3. Potential Demand on Soviet Market for Durable Consumer Goods.



Source: Narodnoe khoziaistvo SSSR v 1989 g. Moscow: Finansy i statistika, 1990, p. 121.

Note: For one group of goods (radios, televisions, refrigerators), over the last 25 years the supply has come close to 1 unit per family. The experience of foreign countries, as well as domestic developments in recent years, show that an increase in income and/or reduction in prices will lead to a further increase in demand for these goods. For other goods (tape recorders, automobiles) supply remains at an extremely low level.

For the second category of consumer goods, the level of saturation is extremely low. Thus only every second Soviet family has a tape recorder and vacuum cleaner; only every third family has a camera; only every fifth family owns an automobile. The shortage of these goods is exceedingly acute. A balance between supply and demand for some of these goods cannot always be achieved even on the black market, where uncontrolled prices on these goods are many times higher than the official state price.

According to the State Conversion Plan, the military-industrial complex is supposed to increase substantially its production of consumer goods other than foodstuffs. In 1991 the production is supposed to amount to 45 billion rubles--one third of all the durable consumer goods manufactured in the Soviet Union. By 1991 it is supposed to rise to 71 billion rubles--an increase of 180 percent over 1990, 260 percent more than in 1988 (i.e., before the beginning of conversion).³⁸

At the same time, it should be noted that 25 percent of the growth in the production of these goods is due to an increase in prices.³⁹ The price rise is, in part, justified by an improvement in product quality. Nevertheless there is good reason to assume that, as a rule, this improvement in quality does not amount to much more than bringing the products up to a certain normal standard, which distinguishes a competitive product from disguised defects. There should be no supplementary payments to cover such

³⁸ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 26.

³⁹ Ibid., p. 5.

"improvement" in quality, at least under conditions of a market that has neither shortages nor monopolies. Therefore it is safe to assume that the price increase on durable consumer goods produced by converted defense plants will be primarily inflationary in character.

Taking this price rise into account, government forecasts for durable consumer goods in 1991-1995 therefore project an increase by factors of 1.44, not 1.8 ($1.8 \div 1.25 = 1.44$). It can be assumed that, even without conversion, production of these goods would also have increased at approximately 3 percent per annum and hence by about 16 percent over this five-year term. In that case, the index of growth due directly to conversion--excluding both the price inflation and non-conversion increases in production--would be a mere 24 percent ($1.44 \div 1.16 = 1.24$). In accordance with this index, the value of the increased production of durable consumer goods that is strictly attributable to conversion and measured in absolute terms will amount to 9.5 billion rubles in 1995.⁴⁰

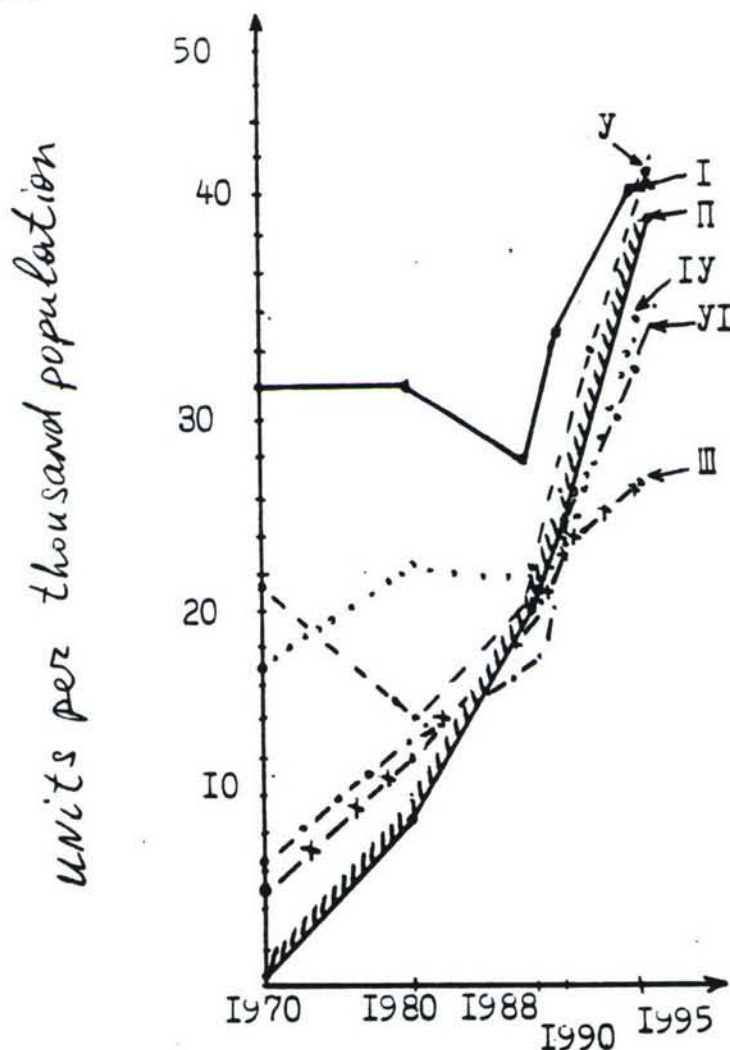
Will the average man in the street feel any perceptible effect in his life from this additional production? To answer that question, one must first calculate how much he is likely to spend on goods and services in 1995. In the absence of hard data, one can only compare this increase with per capita consumer expenditures in 1989. For this purpose, the increment of consumer goods output due to conversion has to be discounted from 1995 to 1989.

⁴⁰ The value of durable consumer goods produced by defense industries in 1990 was equal to 39.4 billion rubles. Hence: $39.4 \times 0.24 = 9.5$.

The result, however, is that conversion will increase the supply of goods for Soviet consumers by just 2.2 percent. Thus the projected increase in the production of consumer goods through conversion is so small that it does not exceed the margin of error for such calculations. Is it however possible that conversion will prove more significant for those particular goods, where the military industrial complex was already dominant?

Figure 4 contains the curves that describe the growth of production indices for several household appliances (per 1,000 inhabitants). With respect to technologically complex goods, where the Soviet Union is particularly lagging behind other countries (color televisions, tape recorders), conversion has simply continued the earlier tendency toward a sharp increase in their production.

Figure 4. The Impact of Conversion on the Production of Various Durable Goods.



Symbols: I Radios —————
 II Color Televisions ///////////////
 III Tape Recorders x-x-x-x-x
 IV Refrigerators
 V Washing Machines - - - - -
 VI Vacuum Cleaners - . - . - .

Note: The production of consumer durables will proceed more quickly during the period of conversion (1989-1995) than in the preceding period. However, a sharp acceleration in the production of these goods is not anticipated.

SOURCES: Narodnoe khoziaistvo SSSR v 1989 g., p. 406; Voprosy ekonomiki i konversii, 1990, vyp. 4, pp. 26-27.

Thus there is now an acute shortage of color televisions: not even every other family now possesses such a television. Conversion plans for 1991-1995 now foresee an increase in the production of color televisions from 26 to 40 per thousand inhabitants--i.e. from 7 to 11 units per 100 households. Significantly, in the preceding five years production had risen from 3 to 7 units. In other words, the rise in saturation of color televisions will be the same during the period of conversion as in the preceding, pre-conversion period: in both phases, 4 families out of 100 per annum.

The situation is quite different for traditional household appliances like refrigerators, washing machines, vacuum cleaners and radios. Here the production indices in the pre-conversion years showed a very slow growth rate, or even decline. During conversion, however, the manufacture of these goods will be sharply increased.

Nevertheless, the impact of the increased production will be relatively modest. Radio receivers offer a case in point. In the 1970s per capita production remained virtually constant--about 32 units per 1,000 inhabitants; by 1988 this level of production had actually declined (28 units). The conversion program projects a production increase to the level of 42 units per 1,000 inhabitants. In other words, the period of conversion allows for about a 50 percent increase in per capita consumption of this product. Given that the average Soviet family has 3.5 persons, the projected increase in radio production will make it possible only for an addi-

tional four of every one hundred families to acquire this product every year ($[42-28] \div 3.5 = 4$).

5.3 Other objectives.

An assessment of the real import of conversion is even more modest if one takes into account the pent-up demand from previous under-production. The scale of demand is indicated by the difference between radio ownership in the USSR and the United States: in the former the average family has one radio, in the latter five. Hence the small increase in production will pale in comparison with the large market of unsatisfied demand. The situation with respect to other durable consumer goods is analogous and leads to the conclusion that, at least in this sphere, conversion will have no appreciable social impact in the immediate five-year period.

In addition to supplying the consumer market with durables, the conversion program is also supposed to address three other problems: food supply, infrastructure development and health care. The impact of conversion on these social sphere can be measured with the assistance of indirect indicators, which reflect the dynamic for producing equipment for the appropriate final usage. Table 2 provides data on the planned tempos of increased production of specific equipment and machinery during conversion, compared with analogous indicators for the preceding period. As the data in Table 2.2 demonstrate, the conversion program foresees a sharp increase in the production of technological equipment intended for

the preservation and processing of food products. Conversion is also supposed to help accelerate the delivery of modern equipment for the development of the infrastructure (which is exceedingly backward), to create the precondition for an increase in the volume and quality of services, and to improve air and water transportation. The health-care industry also anticipates the delivery of modern medical equipment.

Table 2.2 Comparison of Social Needs with Pre-Conversion and Conversion-Period Increases in Production.

Social Problems	Equipment Needed to Solve These Needs	Average Annual Growth Rate in Equipment Production (Percent)	
		1981-1988	1989-1995
Food	Food-Processing Equipment for the Agro-Industrial Complex	4.4%	12.2%
	Equipment for Trade and Restaurant Organizations	5.1%	8.9%
Infrastructure	Construction of Civilian Aircraft	---	18.6%
	Construction of Civilian Ships	---	5.3%*
	Communications	---	9.8%*
Health Care	Medical Equipment	7.8%	14.6%

*Data for 1991-1995, not 1989-1995

In all these areas too, however, the extremely high growth rates in production by no means suffice to cover the built-up

demands. The telephone system offers a good example. The conversion program aims by 1995 to provide the population with 45 to 50 telephones per 100 families (compared to 30 telephones per 100 families in 1990). But this level of increase in telephone production will not enable the country to overcome its cumulative backwardness compared with many other countries or, indeed, to reach the modest level projected by Soviet planners in the early 1970s (which foresaw one phone for every Soviet family). At the same time, the fact that the telephone services of the Soviet Union remain among the most backward in the world inevitably entails enormous losses of material resources, missed opportunities, weak contacts, lost time and physical hardships and stress for its inhabitants.

One must further keep in mind that delivery of the designated equipment seeks only to satisfy bare necessities: in no sense does it provide a full solution to any of these social needs. To cite one example, the conversion program foresees high rates of production for civilian aircraft; indeed, demand in this sector is supposed to be fully satisfied in a few years. But that hardly exhausts all the problems that now confront civil aviation: it will also be necessary to construct modern new airports, to increase fuel production and everything else that the aircraft industry needs to operate. To judge from the conversion experience of the Chinese Peoples Republic, this can partly be satisfied by diverting military airfields and fuel supplies for civilian usage. However,

the Soviet conversion program contains no provisions to use that kind of complex approach to solve these needs.

5.4 Dislocation of workers.

If the social significance of conversion and the tangible impact of its concrete results for the broad population are so limited, the same cannot be said about the negative consequences. Nor can there be any doubts on this score. The deleterious byproducts of demilitarization for those who have worked in the defense sector are far-reaching: a devaluation of professional knowledge, qualifications and experience; the need to change jobs and, sometimes, to relocate; hardships in adapting to new conditions; and, finally, unemployment.

In 1989-1990, in the defense sector itself, some 410,000 people lost their jobs because of conversion. If measured against the average family size in the USSR, this means that 1,400,000 people were directly affected these job reductions. To be sure, at that time mass unemployment was not a problem in the USSR, which, of course, significantly eased the lot of those who had to find new jobs.⁴¹ Of the 410,000 who lost their jobs, 310,000 found employ-

⁴¹ In 1989, of the total population of the work-age population, some 4 million people (2.4%) were temporarily unemployed because of job changes, seasonal work and various other reasons. The rate of unemployed was highest in Azerbaijan and Central Asia. (Narodnoe khoziaistvo SSSR v 1989 g., p. 47.)

ment within the defense sector itself. 131,000 either underwent special retraining or received assignments for such training.⁴²

To ensure the social protection of people from the negative consequences of conversion in the USSR, a "Law on Conversion" has been drafted. It provides compensation for losses suffered by both the employees and the converted enterprises. The draft law proposes to compensate those who lose their jobs because of conversion guaranteeing 75% of their salary. The law also has provisions to give wage supplements (up to their previous average income) for a period of one year, to grant special compensation to cover the costs of relocation and to give various other special privileges. In addition, the draft version of this law begins with the assumption that conversion should not impair the economic condition of the affected enterprises. It therefore proposes to offer special privileges in tax rates, credits and access to government resources.

Beginning in 1992, the defense sector proposes to create a special assistance fund for conversion. Its objective is to support measures to protect the interests of those employed in those enterprises designated for conversion. The Ministry of Defense has also worked out a program, whereby officers released from the army will be given their full salaries for a one-year term.

Nevertheless, the adoption of compensatory measures inevitably encounters a host of serious difficulties.

⁴² Voprosy ekonomiki konversii, 1990, vyp. 4, p. 4.

With respect to specific problems in providing compensation for the negative effects of conversion, it is above all essential to identify three key factors: (1) the massive shortage of housing; (2) the lack of a flexible system for retraining; and, (3) the enormous budget deficit and the government's internal debt (in the form of currency that cannot be turned into goods). In addition, the housing shortage inhibits labor mobility. The result is localized unemployment, which is especially apparent in small towns and closed areas that developed around military enterprises, but also in regions with a surplus labor supply.

The vast budget deficit, together with the internal and foreign debts, make it impossible to take all the necessary measures to protect people from the negative consequences of conversion--in contrast, for example, to what is done in the United States. Some sense of the real scale of the needed measures is provided by the case of the Veterans Administration in the United States: its budget runs to over 28 billion dollars per year. This money is used for such things as direct payments, pensions, compensation, loans, life insurance and medical care. The scale of social insurance in the USSR is incomparably smaller. For example, in 1990 the military pensions amounted to 2.5 billion rubles; expenditures to stabilize wages in the defense complex ran to just 300 million rubles.⁴³

The most important step in the conversion of military industry employees is therefore professional retraining. That would require

⁴³ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 9.

a system for retraining highly skilled specialists so that, within a year or two, they could not merely get a job in the civilian sector, but a skilled position equivalent to the one they had lost. This retraining should be geared toward individual needs and abilities, taking into account their skills, experience and preferences. It will simply not suffice to rely upon mass measures, which would provide a subsistence wage and "retrain" the former military specialists for a low-skilled job. That approach is at once profoundly inhumane and economic wasteful.

To make individualized training available to former employees in the defense sector, the program should work closely with the trade unions. It is also necessary that, apart from economists, the retraining program involve sociologists, psychologists and lawyers, who must organize and conduct the opinion sampling, testing and consulting of the affected employees. Such an approach to re-qualification and relocation of specialists will make it possible to choose a variant of conversion that accommodates the interests of both society and the individual.

The problem of retraining and job placement for one and a half million people in a short period will not appear so discouraging if one takes into account the substantial differences in dealing with various contingents of employees. The task is probably most complex and difficult in the case of those who served in the armed forces. However, this generalization does not apply to those serving for a fixed term (in this case, the problem of retraining is virtually nonexistent), nor for those who have a profession with a

civilian analogue (e.g., military medics). Moreover, the Ministry of Defense reports that most officers have a higher degree in engineering, equivalent to that given by educational institutions in the civilian sector. Nor does the conversion problem exist for unskilled labor. Managers would require a more thorough retraining than designers, researchers or some workers: given the extremely high level of skill demands typical of the Soviet defense sector, they will always be able to find a high-prestige, satisfactory job in the civilian sector.

The conversion plan also needs to take into account the interests of some other groups. Thus the training and production shops of the Society of the Blind have existed in some defense industries; retraining these blind employees will entail enormous difficulties. Hence the conversion plan should include measures that will specifically protect these invalids from a deterioration in their social condition.

In assessing the expected social consequences of conversion, one must not lose sight of the fact that a structural change of this magnitude is bound to have not only positive, but also negative consequences for society in any country. However, the capacity of the government to provide compensation for these negative side-effects are exceedingly limited, given the financial crisis in state finances, the increasing destitution of the population and the latter's growing pessimism.

The widespread assumption that conversion will easily and quickly yield substantial material benefits is entirely fallacious.

On the contrary, even if its overall effect is positive, the concrete benefits for the material improvement of the life of the civilian population will be scarcely perceptible in the first five years of conversion. Taking into account the fact that virtually all social problems have been so badly neglected in past years, the five-year program of conversion promises neither a prompt nor miraculous solution to all these problems.

Under these circumstances, one cannot disregard the possibility that conversion will be transformed from a panacea for all ills into the source of further social tensions, thereby depriving demilitarization of its appeal among a significant segment of the population. To avoid that kind of disenchantment, it is essential that the following be done: (1) to take into account the conversion experience of the United States, China and other countries, the development of demilitarized economies in Japan and Germany, which testify to the long-term, cumulative character of the positive benefits from disarmament and conversion on the condition of the economy and living standards; (2) the idea of conversion must be freed from the element of unjustified wishful thinking, and its program must be analyzed from the perspective of the constraints on its realization.

6. REALISM AND EFFICIENCY IN THE SOVIET ECONOMY.

In an economy of shortages, every phenomenon must above all be examined from the perspective of the real possibilities of providing the necessary resources. Whereas the chief difficulty for conversion in the West is finding a suitable market niche for the sale of its products, in the Soviet type of economic system the chief limitation on conversion is to acquire and supply financial resources as well as quality materials and components.

The first stage of conversion in the Soviet Union was accompanied by the non-fulfillment of plans. This had an especially negative effect on food supplies for the country. In the opinion of one of the leaders of the State Commission on Food Supply, the large-scale failure of defense plants to deliver equipment denied the agro-industrial complex the requisite capacities to process the agricultural production, thereby putting its entire food-supply program in jeopardy.⁴⁴

Alongside the usual difficulties of conversion, in the USSR one also encounters some very unique forms of shortage. The key point is that the supply of resources for conversion requires the cooperation of highly diverse producers, and it is extremely difficult for the converted plants to arrange this cooperation. For example, the Cheliabinsk Tractor Plant decided to use its converted capacities to manufacture mini-tractors; the demand for such tractors in the USSR is almost unlimited. However, this enterprise did not fulfill its original plan to produce 1 million

⁴⁴ Ekonomika i zhizn', 1990, April, No. 18, p. 10.

tractors in 1990, because its suppliers refused to accept orders for engines and other parts.⁴⁵ Although this is a single instance, an analysis of many other cases (widely described in the central and regional press) demonstrates that the Cheliabinsk experience was typical for conversion under conditions prevailing in the USSR.

The output of military goods is supposed to be reduced by 20 percent, but the plan for the production of civilian goods calls for an 82 percent increase.⁴⁶ Of course, it is impossible to limit the analysis to a comparison of percentages; it is essential to calculate the absolute increases. These absolute figures are shown in the Table 2.3.⁴⁷

Thus the predicted increase in civilian goods is 4.2 times greater than the reduction in military goods. Under the conditions of an economy beset by acute shortages, the task of providing sufficient financial and material resources therefore represents an exceedingly difficult problem.

⁴⁵ Sovetskaia Rossiia, 20 March 1990.

⁴⁶ Derived from the statements by N. I. Ryzhkov at the II. Congress of People's Deputies of the USSR (Pravda, 14 December 1989).

⁴⁷ The volume of production of civilian goods based on data about the production of its main goods (Voprosy ekonomiki i konversii, 1990, vyp. 4, pp. 18, 26-31), whereas the volume of production of military goods is derived from the share of civilian production in the total output of the military-industrial complex. In 1990 the latter amounted to 49.3 percent; in 1990 it was equal to 54.7 billion rubles ($53.2 \div 0.493 = 54.7$). Ibid., p. 27, figure 1.

Table 3. Absolute Increases in Military and Civilian Production by the Defense Sector (Billions of Rubles).

Type of Production	1990	1991	Increment
Civilian Goods	53.2	98.8	+45.6 %
Military Goods	54.7	43.8	-10.9%
Total Production	107.9	142.6	+34.7%

Given the large number of state decrees and programs which lack financing, the feasibility of the conversion program depends on its capacity for self-financing--that is, the financial sources that are built into the program itself. Therefore a necessary condition for fulfillment of the conversion program is a reduction in military expenditures sufficient to cover the additional expenditures on conversion plus the drop in income from the decline in military production.

If this condition is not satisfied, financing for the conversion program will depend on diverting these resources to the defense sector from other sectors of the national economy. Here two fundamental realities cannot be overlooked: (1) the absolute volume of capital investment in the USSR is being reduced; (2) virtually all sectors of the economy reveal a heightened demand for investment capital. In view of these circumstances, the probability of increased state investment in the defense sector--even if for the production of civilian goods--hardly seems likely.

The demand that the conversion program be self-financing, to be sure, does not mean that this rule applies for every enterprise.

On the contrary, as experience has shown, the state must assume a significant share of the burden of protecting the interests of people affected by conversion, of safeguarding the environment, and of supporting research projects for the production of civilian goods. However, given the present condition of state finances, the sum of such expenditures cannot exceed the cutback in military expenditures.

According to the State Conversion Plan, implementation of this program in 1991-1995 requires the investment of 40 billion rubles. It is estimated that about 58 billion rubles will be required for R&D expenditures.⁴⁸ The total sums required by the defense sector to produce its plan for consumer goods amounts to almost 100 billion rubles, of which more than half (55 billion rubles) are to come from the all-union budget. The latter sum includes 16 billion for centralized capital investment and more than 36 billion rubles for R&D (according to more exact estimates, 39 billion rubles).⁴⁹ The remaining 43 billion rubles are supposed to be taken from the budgets of the defense firms themselves.

The question is whether these two sources can sustain the additional financial burden by reducing spending on defense and increasing their income from the production and sale of civilian goods. Can the government really avoid resorting to a redistribution of funds among sectors, or to taxation and inflation which would lower the standard of living? Only a highly speculative

⁴⁸ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 10.

⁴⁹ Problemy prognozirovaniia, 1990, vyp. 2, p. 25.

answer can be tendered for that question, for the economic situation in the USSR is so volatile and unpredictable, that the state itself has declined to prepare a five-year plan for 1991-1995.

If the volume of defense output for 1990 and 1991 (cited above and calculated on the basis of published figures on the State Conversion Plan) are taken as baseline figures, the total output by the military-industrial complex for 1991-1995 is supposed to amount to 750 billion rubles. Let us assume that profits will comprise 15 percent of this sum, for that has been the profitability level in the machine-building complex during recent years. Under these assumptions, the anticipated profits of the defense industries will amount to more than 110 billion rubles. After the payment of taxes and other deductions, the military-industrial complex will have at its disposal--at the very most--no more than a third of the sums required to finance its additional production of civilian goods. Even if one makes the most favorable assumptions, this sum will amount to 36 billion rubles. That is 7 billion rubles less than the amount that, according to the Conversion Plan, is supposed to come from the defense sector itself.

Let us now analyze the source of the 55 billion rubles for civilian production that the defense industry is supposed to receive from the state budget.

According to official publications (which form the basis of the conversion program), by 1995 the proportion of national income spent on defense is supposed to be cut by 1.5 times. When the draft of this program was reviewed by Gorbachev's Presidential

Council, it was decided to make various changes and amendments to take into account the additional agreements on the reduction of weapons and armed forces.⁵⁰ This very dependence of military spending on the international situation introduces an element of uncertainty into calculations about the possible cutbacks in military spending over the next five years.

Moreover, this formulation makes the absolute magnitude of military spending and its reduction dependent upon the volume of national income. However, it is anything but clear whether the national income in 1995 will be higher or lower than it was in 1990. The greater the national income in 1995 (given a constant proportion of military spending), the greater the spending in the defense sector; in other words, the higher the national income, the less will be the absolute reduction in military expenditures. And conversely: the lower the national income, the lower the military spending in absolute terms and hence the greater will be the cutbacks.

The weak point in this reasoning is the assumption of the share of military expenditures in the national income being cut 1.5 times. This assumption results in freezing the share at a certain level in 1995. That military spending will float according to the actual changes in the share of the national income. This consideration adds another substantial element of uncertainty to the plans for conversion.

⁵⁰ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 33.

Finally, the financial resources freed by cutbacks in military spending are difficult to calculate because of the uncertainty of these expenditures. Thus the calculations produce one result from a 1.5 times reduction if military spending is assumed to be 12 percent (the proportion officially recognized in 1989); quite another result obtains if that proportion is nearly twice as high, as some estimates would have it. Indeed, it is often argued--in Soviet as well as foreign sources--that the scale of Soviet defense spending is significantly higher than the official figure of 12 percent. Matters are complicated still further by the total failure to take into account the effect of inflation on military spending.

At present, no one can doubt the difficulty of predicting the scale of cutbacks in military spending over the next five-year term. Nevertheless, we shall try to calculate at least a rough estimate.

The decision to cut the share of military spending by 1.5 times was taken at the end of 1988 against a background of two key circumstances: (1) it seemed highly probable that the Soviet economy would undergo a positive, if modest, growth; (2) a military budget of 77.3 billion rubles had just been announced for 1989.⁵¹ Under these conditions, V. A. Fal'tsman calculated that the absolute reduction in military spending between 1990 and 1995 would

⁵¹ Argumenty i fakty, 1990, no. 45, p. 2.

amount to 10 billion rubles.⁵² The cumulative savings from the military cutbacks would thus amount to 30 billion rubles. That total is only a little more than half of the 55 billion rubles which the conversion plan expects to derive from demilitarization.

Moreover, the conversion program does not take into account all the inevitable expenditures which will be required for various social needs as well as for the utilization of the redundant weapons. Under these circumstances, it is fair to conclude that the expenditures required for conversion exceed the anticipated returns and that therefore one must have doubts about the feasibility of implementing the conversion plan.

An analysis of the situation in 1990, tentative as it must be, nevertheless sustains the above conclusion. According to published data (unfortunately, relating to plan targets), the absolute magnitude of military expenditures fell by 6.4 billion rubles between 1989 and 1990. At the same time, it was proposed to allocate 4.4 billion rubles on capital investment and 4.9 billion for R&D for civilian production.⁵³ To this should be added another 0.3 billion rubles, which the government gave the military-industrial complex for wage and salary stabilization. Hence the total state outlays for conversion in 1990 amounted to 9.6 billion rubles, which is 50 percent more than the sources that are supposed to cover them.

⁵² Mirovaia ekonomika i mezhdunarodnye otnosheniia, 1990, no. 8.

⁵³ Mirovaia ekonomika i mezhdunarodnye otnosheniia, 1990, no. 8.

Thus, from the very outset, conversion in the Soviet Union came to rely upon so dubious a source as the state treasury. This not only casts into doubt the feasibility of the conversion program, but the resulting situation could also discredit the very idea of demilitarizing the national economy. The reason is that it demands huge expenditures, offers limited economic benefits, and threatens to inflict serious social ills.

There is, therefore, an obvious lack of balance between demand and supply in financial means within the conversion program - indeed, demand for finances clearly exceeds supply. However, that is not the only financial weakness in the plan to implement conversion in the USSR. In a deficit economy one must deal with the problem of an incomplete internal convertibility of the ruble.

Inconvertibility of the ruble results from the fact that the ruble has ceased to be a universal equivalent, which can be exchanged for any good. This means that, in an economy of chronic shortages, goods and material valuables have a life of their own, independent of ruble values. An increase in spending on various social needs through a reduction in military budgets is realizable only to the extent that the corresponding equipment, materials, goods, building capacities, etc. are provided.

Take, for instance, the question of diverting capital investments from defense to health-care. In a balanced economy with freely convertible currency there is ordinarily no quantitative limits whatsoever if one seeks to shift financial means between these two sectors. That kind of reallocation in the Soviet econo-

my, however, is feasible only to the extent that additional medical equipment and construction capacities are available. If the latter are not provided, the results will be negative; at the very least, it will mean non-fulfillment of the plan for capital investments in health. But this imbalance between finances and resources can also entail more serious consequences, including a further growth in unfinished construction as well as an inflation in the price of medical equipment and other health-care goods.

From the perspective of incomplete convertibility of the ruble in the Soviet national economy, military expenditures on weapons and ammunition cannot automatically be diverted to improving social services.

Savings in salaries in the military would seem to be the easiest to turn over to civilian uses. But even in this sphere there are constraints on freedom of action: part of the savings must be used for special assistance, unemployment compensation and pensions, while another part must go to the sectors employing the military personnel that has been discharged.

The line in the military budget for foodstuffs is highly convertible, and reductions in this area could be directed toward solving the nutritional needs of any group or region in the USSR. However, in real economic terms, any change in these expenditures must not be made until the allocations for the wages and salaries of military personnel have been revised.

The outlays on military schools, by their very nature, are most similar to the expenditures on education. The same can be

said of the expenditure of money and materials to support military hospitals, sanatoria, sports complexes: the latter are all analogues to similar items in the civilian budget, with its expenditures for health-care institutions and sports.

In regional terms, the possibilities for reallocation of capital investment from the defense to civilian sector must remain within the limits for a parallel redistribution of construction capacities and the mobility of the capacities of contracting organizations.

This analysis of constraints on the sources of financing and reallocation of resources among various objectives must be supplemented by a study of the efficiency of capital investment in the State Program for Conversion. The projected capital investment in the military-industrial complex--to the amount of 40.8 billion rubles--is intended to stimulate an increase in civilian production with a value of 45.6 billion rubles. In the absence of conversion (i.e., if this increase in production were to be attempted from "point zero," without the diversion of defense resources), an investment of 55.7 billion rubles would be required. Thus the utilization of various defense-sector resources (buildings, equipment, production capacities) is supposed to enable a savings of 14.9 billion rubles in investment capital. That amounts to about one quarter of the entire amount of the requisite investment.

It should be noted that a certain part of this saving comes from increasing the utilization of previously existing capacities for the production of civilian goods. Increase in output from

existing capacities will be achieved by diverting part of the productive resources from the defense sphere; initially, this can be effected without supplementary capital investments in the military-industrial complex. In particular, this kind of growth in the defense sector was obtained from the productive capacities at 188 enterprises of the former Ministry of Machine-Building for Light Industry and Food-processing (Minlegpishchemash): the utilization of capacities at these plants stood at just 65 to 75 percent in 1988.⁵⁴ Indeed, at the older enterprises in the defense sector, the level of utilization of productive capacities for the manufacture of consumer goods had sharply fallen during the 1980s. That decline affected a number of goods, as the Table 2.4 shows.

Table 2.4 Rate of Utilization of Productive Capacities at Defense Plants Producing Consumer Goods (in Percent).

Product	1980	1985	1988	1989
Televisions	94	96	92	92
Washing Machines	94	95	93	89
Lightbulbs	90	89	84	82

Source: Narodnoe khoziaistvo SSSR v 1989 g., pp. 362-363.

Thus the initial phase of conversion may be described as "the process of tapping unutilized productive capacities."⁵⁵

Savings in capital investments also will come from retooling part of the defense production so as to manufacture civilian goods.

⁵⁴ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 8.

⁵⁵ Vestnik mashinostroeniia, 1990, no. 7, p. 4.

Of the 40.1 billion rubles in capital investments, some 9 billion ruble--about one-fifth of the total--is earmarked for this purpose. The remaining four-fifths of capital investment is to be used for the construction of new productive capacities for the manufacture of civilian goods by enterprises in the military-industrial complex.

Under conditions where capital is in critically short supply, it is proper to ask just how efficient is this capital investment. Would it not be more efficient to invest in machine-building in the civilian sector?

As a benchmark standard to measure efficiency in capital investment, one can use data on the increase in production per ruble of investment. For the machine-building complex in the period 1981-1988, this amounted to 80 kopecks per ruble of investment.

As might be expected, the efficiency of investment to reequip plants to manufacture civilian goods is exceedingly high. According to official projections, by 1995 the 9 billion rubles of capital investment for this purpose will yield 13.4 billion rubles in additional civilian goods.⁵⁶ Hence the return will represent 1.50 rubles of increased output per ruble of investment--that is, almost twice the rate of return that could be expected from the civilian sector.

As for the remaining part of the capital investment (31.1 billion rubles), which is intended to finance the construction of

⁵⁶ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 26, figure 2.

new capacities in the defense sector to manufacture civilian goods, this is supposed to yield an increase in production valued at 32.2 billion rubles ($45.6 - 13.4 = 32.2$ billion rubles). Hence the rate of return is to comprise about 1 ruble of output per ruble of investment. Although diversification of the military-industrial complex is less efficient than conversion, the anticipated efficiency is nonetheless higher than what could be expected if this capital were invested in the civilian sector.⁵⁷

How is one to explain the high return on capital investment specifically for the production of civilian goods by the defense sector?

In the first instance this is rooted in the price increases implicit in the program. The forecast for the production of civilian goods by the defense sector in 1991-1995 posits an increase of 80 percent. If, however, this growth is recalculated in terms of physical quantities and unchanged prices of 1990, the increase is only 50 percent. In other words, approximately 30% of the increase is to come from an increase in prices, not output.

According to the authors of the conversion plan, this price increase reflects an improvement in the quality of production. No doubt, there would be some improvement in quality. But will the quality exceed the level which was assumed for setting 1990 prices

⁵⁷ These calculations do not sustain the view that the scale of financing for the military-industrial complex (capital investment plus current operating costs) for the conversion program are exaggerated at least 2.5 to 3-fold (Problemy prognozirovaniia, 1990, vyp. 2, p. 26). Rather, the expected results--increase in output--are too high.

and which distinguishes usable products from waste? Can the improvement in quality compensate for the increase in prices?

On that issue there is an alternative opinion. According to the latter, the pressure for reaching the volume of productive targets are built into the conversion program will inevitably lead to a "sharp increase in price without a significant improvement in quality." In particular, this means that there will be an artificial inflation of the manufacturing costs of civilian goods by adding on overhead expenses that are actually related to the production of military goods.⁵⁸

Let us assume that the price increase on the civilian goods manufactured by the defense sector, is not justified by an improvement in quality and is inflationary. In that case the expected growth in the volume of production of civilian goods will be smaller than 20 percent. Accordingly, the rate of return on capital investment will fall from 1.00 to 0.80 rubles per ruble invested--i.e., it will be analogous to the rate of return found in the civilian sector. In that event the analysis leads to the logical conclusion that, from the perspective of efficiency, it makes no difference where one builds the new productive capacities for consumer goods--in the military or in the civilian sectors of the economy.

From the foregoing it should be clear that the problem of quality will be a key issue in conversion.

⁵⁸ Problemy prognozirovaniia, 1990, vyp. 2, p. 24.

Compared with the civilian sector of the economy, the military-industrial complex has important advantages in seeking to attain a higher quality of output in consumer goods: it has its own technological and personnel base for innovation. However, the defense industries are insulated from free market competition; they are, rather, accustomed to monopolistic production for a single consumer--the state. Hence they assign top priority not to commercial considerations of reducing unit cost of production, but to attaining military and strategic superiority, no matter what the cost. By the very nature of things, civilian production will always remain a secondary concern for the military-industrial complex, however great its volume may become.

Hence the development of a market economy and competition mean that the prospects for an improvement in quality are much greater in the civilian rather than defense sector. Although the civilian sector does not have the advantages of the military enterprises (in personnel and scientific-technical potential), it is far more fit to win a competitive struggle in a market economy. If state paternalism does not intervene, one can expect that part of the personnel will shift from defense industries to the civilian sector. Indeed, this process has already begun.

An analysis of the resource constraints on conversion shows convincingly that it is essential to design a new conception and alternative variants for the implementation of conversion. After the Soviet government had promulgated the State Plan for Conversion, it simultaneously instructed the Academy of Sciences to "de-

velop practical recommendations concerning: the conceptual foundations of implementing conversion under different variants of cutbacks in military spending; new principles of mobilization preparedness of the economy under conditions of a transition to a market economy; and an assessment of the impact of this work on the national economy."⁵⁹

⁵⁹ Voprosy ekonomiki, 1991, no. 2, p. 8.

7. ALTERNATIVE CONVERSION PROGRAMS.

If one seeks to formulate alternatives for conversion that are different not only in terms of quantity, but also quality and substance, then the following alternatives to the state program might be adduced.

7.1 Reduced Investment in the Defense Sector.

1. Reduce the excessive investment in the military-industrial complex for purposes of expanding the production of civilian goods. This refers to an absolute reduction in the volume of investment in defense industries for the sake of creating new productive capacities for the manufacture of civilian goods. This proposal to prepare variants for a more moderate investment policy derives not only from fiscal constraints and budgetary deficit, but also from the shortage of construction capacities and metal.

Financial and banking experts conducted an analysis of capital construction at 44 defense enterprises and found that the number of construction projects in the military-industrial complex are already excessive. The result has been construction delays; hence the volume of unfinished construction and unutilized equipment (which has been acquired but left in storage) rose sharply in 1990.⁶⁰ The state of capital construction in the USSR is such that a further expansion of capital investment will lead not so much to an increase of manufactured goods for the general population as to

⁶⁰ Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 72.

an increase in the scale of unfinished construction--which, in recent years, has devoured almost the entire increase in the Soviet GNP.

The military-industrial complex is the single largest consumer of metal in the USSR. Given the enormous shortage of this resource in the Soviet Union, the conversion program projects the following growth in its utilization for civilian purposes in 1990 (compared to the level in 1988): rolled iron 1.7 times, rolled aluminum 2 times, rolled copper 1.8 times. At the same time, the demand by defense industries for military production will not be reduced, but will even increase: 8 percent for rolled iron, 7 percent for rolled aluminum, etc.⁶¹

The absolute increase in demand for metal is such that, to satisfy this demand, it will be necessary either to build a huge new metallurgical plant or to make a corresponding increase in metal imports. For understandable reasons, the Soviet Union is in no position to undertake either of these options. Therefore, even if it were possible to commission new capacities for the production of civilian goods by the planned deadline, they would not be fully utilized because of the lack of metal.

Therefore one alternative program is to make moderate investment in the defense sector in order to increase the its production of civilian goods. This would enable reductions in the cost of conversion without a reduction of the real output of civilian goods. The nominal cutback of civilian production will be only a

⁶¹ Problemy prognozirovaniia, 1990, vyp. 2, p. 25.

paper fiction, since the lack of investment resources means that the current production target is unattainable anyway.

An alternative plan of moderate financing for the development of civilian production by the defense sector should take into account the minimum level of expenditure for conversion. This minimum should cover the cost of retooling defense capacities for civilian production; scrapping; mothballing and maintenance of mothballed equipment.

Investment in conversion, without question, is only economically efficient to the degree that it permits a partial utilization of earlier investments which have now been rendered superfluous by the cancellation of military orders. In the first instance it is possible to use the buildings, structures and production sites; to a lesser degree is it possible to utilize the machinery and equipment. Hence, compared to the construction of new enterprises, the capital investment to retool any operating capacities entails smaller construction costs, though larger outlays for machinery. The net result, in short, is a high increment in the growth of production. In 1991-1995 the share accorded to construction work in the capital investment for retooling old defense capacities is to comprise only 23 percent. By contrast, the outlay for new construction in the same sector amounts to 35 percent.

It would be a mistake, however, for anyone to think that this alternative plan for conversion is possible--i.e., that expenditures for re-equipping old capacities can be increased and the construction of new ones can be reduced. Given the cuts in weapons

production that were envisioned in the conversion program, such possibilities have been virtually exhausted. The key point is that a necessary (but not sufficient) condition for the reorientation of defense capacities for civilian production is not only a reduction in the volume of weapons production, but also a reduction in the number of weapons produced. Only in this event is it possible to free up capacities for the subsequent retooling to produce civilian goods. In the contrary case, if the list of weapons categories is not reduced, if only the volume of production and coefficient of capacity utilization is diminished, conversion will follow the least efficient path of new construction and the expansion of existing capacities and sites.

7.2 Restructuring of the Conversion Policy.

A second alternative to the current conversion program consists in a restructuring of its basic policy. This restructuring consists of three main elements:

- (a) embark on a further reduction in the production of weapons and munitions to the point where these cutbacks would exceed the proposed increase in the production of civilian goods.
- (b) make greater use of the international marketplace by increasing not only the export of finished high-tech products (the feasibility of which is highly problematic), but also the

export of high-quality raw materials and semi-finished components.

(c) analyze the consequences of a more moderate increase of expenditures for the key government programs (e.g., the civilian space program) on economic development.

Let us examine the economic import of these proposals more closely.

The potential for further reductions in weapons production, personnel and military technology depends substantially on the state of international relations. As noted, however, purely economic reasons for progress in this area have already developed in the USSR. Moreover, the anticipated decline in production in the Soviet Union (according to some estimates, as high as 30 to 40 percent), along with possible changes in the territorial and political structure of the USSR, have imparted almost an element of irreversibility to a program of demilitarization.

If one starts with the assumption of a basic symmetry in the process of disarmament in the Soviet Union and United States,⁶² one can draw upon the following variant programs, whose social-economic consequences have already been calculated in terms of the American conditions.⁶³ Variant No. 1 postulates a 50-percent reduction in strategic offensive weapons. Variant No. 2 foresees, over a five-year term, a similar 50-percent reduction in strategic forces and the production of strategic weapons, but only a 25-percent cutback in non-nuclear weapons and their production. Variant No. 3 aims at

⁶² To be sure, this is merely a presumption and does not preclude an asymmetrical line of development in the future.

⁶³ SSha: Ekonomika, politika, ideologiya, 1989, no. 3, pp. 89-90.

a 95-percent reduction in strategic forces and a 50-percent cut in ordinary forces.

An analysis of these variants produced the following conclusions, which, with certain qualifications, can be applied as well to the Soviet Union. The social-economic consequences of Variant No. 1 are minimal, since the expenditures on strategic forces consume only 7 percent of the total military spending in the United States.⁶⁴ Therefore the annual reductions in military spending amount to just 5 percent; the number of personnel no longer needed (in active service and in defense industries) is 64,000 people (0.05 percent of all those employed). Variant No. 2 enables a reduction of military spending by almost 20 percent and cuts 327,000 military and civilian personnel from the defense payrolls. Finally, variant no. 3 foresees a 40 percent cut in spending and a reduction of 280,000 military and civilian employees.

The State Program for Conversion in the USSR, taking the idea of "reasonable sufficiency" as its operating principle, foresees a reduction in the production of regular weapons having an offensive capability. This includes attack aircraft, tanks, self-propelled artillery, munitions, and the means required for airborne and amphibious assault. Production of gunpowder, enriched uranium and solid fuels is also to be reduced.⁶⁵

⁶⁴The strategic forces of the Soviet Union, by contrast, do not exist as separate organizations and instead constitute parts of the general armed services. As a result, the corresponding expenditures for these units are not separately calculated. See Argumenty i fakty, 1990, No. 45, pp. 1-2.

⁶⁵Voprosy ekonomiki i konversii, 1990, vyp. 4, pp. 17, 19, 31.

Despite this actual reduction in the size of the army, number of tanks, missiles and other weapons, the military budget of the Soviet Union--even in constant prices--may well grow because of the rising outlays to provide support for the army, to cover new assessments on land utilization, to pay for human resources etc. Therefore, in the opinion of specialists, it is highly unlikely that the Soviet government will succeed in making a radical reduction in its military budget in the next few years.

Variants in the structure policy of conversion pertain not only to a reduction in weapons, but also to the sphere of increasing the production of civilian goods.

The strategic thrust of the conversion program aims to ensure scientific and technological progress in key branches of industry and in the economy more broadly. In addition, at the very nucleus of the economic structure, priority is given to the program for the development of electronics in the interest of the national economy; this sector is to receive more than a third of all the capital investments for conversion. Moreover, of the spending on R&D, more than a third is allotted for computers, electronics and the civilian space program.

An alternative to accelerated development in this sector would be a more moderate variant, at least in the immediate future. This moderate variant for electronics development in the national economy and civilian space program would begin with the assumption that the Soviet society and economy has not, as yet, sufficiently matured to require a forced development of modern information

technology. It is, for instance, clear that the Soviet Union lacks the basis for maintenance and repair of electronic equipment by the manufacturers; yet industrial firms manifestly cannot handle this by themselves, as they do with machine-tools and equipment.

Serious doubts are also raised by a further theoretical question: can the main source of technological progress in the USSR be located in the military-industrial complex, which is essentially outside the sphere of free enterprise? It is also essential to assess the wisdom and efficacy of channeling part of the scarce resources from sphere of essential, undeferable social demands to the electronics and computers sphere.

In revising the variant program for moderate investments in the defense sector with respect to information technology, electronics and space, it is of course important to pay special attention to those areas where development is urgently needed. That would include such areas the development and application of computer technology in medicine and education.

A study of the diffusion of innovations in the Soviet economy points to one broad tendency: the quality of production declines along with an increase in the degree of processing and manufacturing. The world markets confirm that basic raw materials, fuel, and electricity from the Soviet Union are in no way inferior to foreign counterparts. Metal, construction materials, and some chemical products are all competitive on the world market. By contrast, only a small percent of finished goods and machines satisfy the demands of the world market. Because of this, the Soviet domestic

market has an almost insatiable demand for the import of virtually every form of manufactured good from the West.

This fact suggests an alternative to the structural policy of conversion: the main contribution of conversion in the defense sector should be directed not so much toward manufactured goods and high-tech production, as toward high quality metal and other construction materials and semi-finished goods. The chief source of these materials are high-quality metallurgical plants and other branches for the production of quality construction materials, the capacities of which are to be released by the reduction in military orders. An additional source of these materials, although in the form of scrap, will come from the liquidation of various weapons. A final source is the cutback in superfluous stockpiles of resources.

For example, there is a great demand on the international market for Soviet heat-resistant alloys (which are used to prepare missile nozzles), metal from electro-slag and electro-vacuum resmelting, and many other non-oxidizing and complex steel alloys and non-ferrous metals. Such metal sometimes is more costly than silver. Hence it is sometimes uneconomic to use such metal for the production of just any civilian good. The sale of these metals on world markets as metalware, cast metal, sheet metal, etc. can serve as a real source of hard currency to pay for the purchase of the finished goods that are needed.

The variant to conversion, which is based on participation in the international division of labor, proposes not only to export

materials and semi-finished goods, but also high-profile civilian production (e.g., airplanes and ships). However, proposals to sell superfluous military goods (which has been suggested by some leaders in the military-industrial complex), may be economically important, but will elicit sharp criticism because of their destabilizing impact on international relations.⁶⁶

Notwithstanding the policy of strict secrecy, many Soviet enterprises in the defense sector have shown themselves to be remarkably easy-going and zealous in seeking contacts with representatives of Western business circles. In 1990 more than 100 enterprises and organization in the defense sector had joint ventures with foreign firms. For example, Soviet firms were conducting negotiations with a variety of Western firms: with French firms for the construction of a telecommunications system using Soviet space platforms and for the construction of a laboratory for ecological control using the orbital station "Almaz-T"; with German firms to produce digital telephone switching equipment, optical-fiber cables, etc.⁶⁷ However, many foreign firms (including American firms) are not making haste to invest in Soviet enterprises, since the Soviet Union still lacks the necessary guarantees for the functioning of private capital.

Under these conditions, it would be more effective to expand foreign trade through the export of materials, including scrap and

⁶⁶Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 12.

⁶⁷Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 23.

semi-finished goods. However, the licensing obstacles in the USSR to such trade, unfortunately, are still quite substantial.

7.3 Change the institutional structure of administration for the production of consumer durables and other civilian goods by the defense sector.

To bring this administrative structure into accord with the economic reforms and the terms for transition to a market economy, two main measures are required: (a) the center of gravity for the administration and planning of conversion should be shifted from the upper echelons of state authority to the level of enterprises; (b) remove from the defense sector and transfer to the civilian industry the production of consumer durables, dual-purpose goods, and also capacities for the production of dual-purpose goods and components.

This all represents a multi-faceted process, which encompasses: a dismantling of state dominance and transition to new forms of property and administration; de-monopolization and demilitarization of the economy; expansion of market competition in the production and sale of most durable goods and other products for non-military consumption.

Figure 5 depicts the flow chart for the preparation of the State Program of Conversion. It is based upon vertical connections, whereby decisions on the selection of variants are taken by higher levels in the administrative hierarchy--in practice, by the

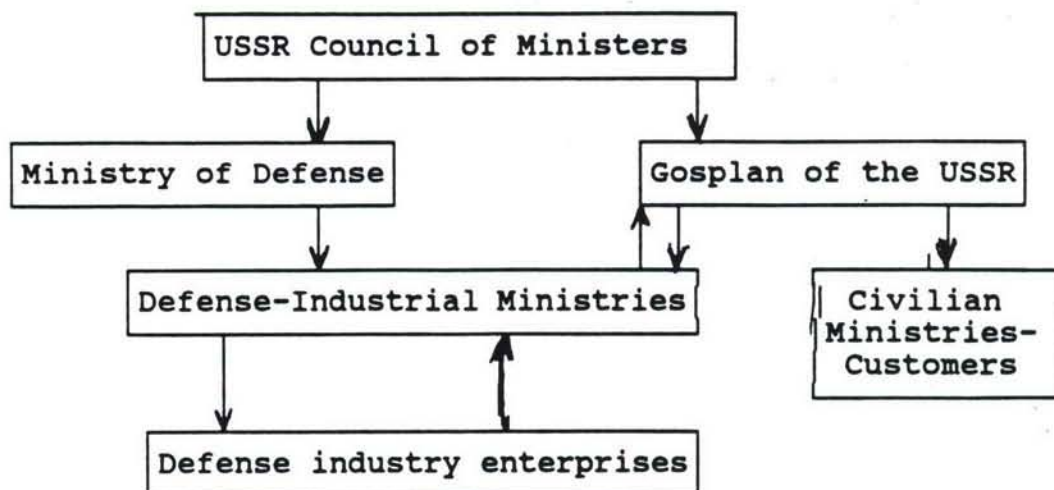
apparatus of the Cabinet of Ministers and Gosplan. The proposals of defense plants and even ministries are taken into account insofar as they correspond to the interests of the center--even if the latter are not always economically justifiable. Such an approach to conversion presupposes the absence of serious economic motives for conversion at the plant level and a significant level of paternalism on the part of the state in lieu of accountability for decisions, for unjustified spending and for missed opportunities.

The methodology for preparation of this program is virtually identical with that used for compiling the state plan for the social and economic development of the national economy used before the start of the economic reform. According to this method, Gosplan prepares control figures for the defense industry. These control figures are based on proposals from the Ministry of Defense for the development and delivery of military equipment; the proposals of foreign-trade organizations for export are also taken into account. The plan includes objectives for the production of military and civilian goods, with separate targets for consumer durables. The control figures also set limits on capital investments, the most important types of material resources and the volume of military and civilian R&D.

On the basis of these control figures from Gosplan, ministries in defense sector compile a list of enterprises, scientific-research institutes and design firms that are to be converted. The latter are then given assignments for the production of civilian

and military goods. Simultaneously, the question of supplying components is also considered and resolved. On the basis of these

Figure 5. Flow Chart for the Preparation of the State Conversion Program.



Source: Methodological instructions for the preparation of the State Conversion Plan for the Defense Industry.

Note: The chart is based on vertical connections, which are characteristic for the Soviet administrative system for planning and administration not only with respect to defense industries, but also civilian branches. The names of all organizations are given in that form in use during the period when the conversion program was being drafted.

assignments, the enterprises and institutes prepare full-scale plans for conversion over the following five-year term.

If one examines the experience of applying this kind of methodology for plan preparation in the past, one can give the following characterization to the conversion plan. At first glance, this document is voluminous, precise and detailed. However, the fact that it is "doomed to non-realization" was already apparent at the time of its promulgation, and unfortunately all this was fully confirmed by what happened in the first stage of its implementation. Despite the presence of a section on economic mechanisms in the program, there are really no incentives which are capable of evoking the self-interest of enterprises in fulfilling their assignments within the quantitative and qualitative parameters. In essence, the sole motive for implementing the conversion plan comes from non-economic coercion by central authorities.

If one draws upon the conversion experience of countries with a free-enterprise system, a quite different approach to the administration of conversion could be proposed. All the basic decisions - concerning the assortment and quality of civilian production, non-military R&D - are to be handled at the micro-level, as a prerogative of the defense enterprise itself, which are oriented toward the demands of the market. It is precisely the enterprise itself which possesses the most complete information about the status of its R&D, reserves of machinery and equipment, personnel and other data which are essential for taking effective production decisions.

The state should warn the enterprise well in advance that its military orders are to be reduced. The enterprises in turn could begin work on the conversion program without waiting for further admonitions and warnings. This demobilization plan based on advance warning is all the more necessary since, as experience in foreign countries has shown, under normal conditions it takes about two years to prepare a conversion plan in enterprises.

The conversion program at defense enterprises, it appears, should be multifaceted and vary in intensity. Programs can differ by the scale of cutbacks in military orders, possibilities for receiving their own and borrowed resources, and the volume of budget allocations for the social support of conversion in a given region.

Under conditions of increasing influence of the market, the state program for conversion can no longer set production targets for the consumer goods. The quantitative and qualitative parameters must be able to respond flexibly to changes in demand on the internal and foreign markets.

Within a free-enterprise economy, decisions at the macro level should be taken only with respect to the scale of cutbacks in the military budget--both in absolute terms and with respect to individual budget items--as well as with respect to state support for the conversion program. Under these conditions, the main element in the program should be the plan for financing, which reflects the interaction of the defense sector and the state budget.

It must be said that this alternative scheme for administering the Soviet conversion program can only be realized when the country has overcome massive shortages in the economy and achieved a fundamental balance between supply and demand. Under contemporary conditions, with chronic shortages in the economy, the conversion process must follow the path of centralized planning, reinforcement of the administrative-command system and military-industrial complex, and the concentration and monopolization of production.

The logic of production relations in a deficit economy forces defense industries--amidst an increase in the output of civilian goods--to seek ways to secure their own supply of resources, to reduce the number of unreliable external suppliers, and to expand their sphere of operations to allied branches of productions. As a result, the boundaries of the defense industries, as a sector of the economy, are actually expanding. The ministries for defense industries actively support this process of concentrating production.

As a result, the role of the defense complex in industry and in the national economy is increasing, which in turn only strengthens the position of the administrative-command system in the USSR. It hardly needs to be said that this process, to put it mildly, is hardly favorable to the implementation of economic reform.

In this respect, it is highly dubious whether it is wise, under conditions of a deficit economy, to follow a policy of forced investment for the purpose of expanding civilian production by the military-industrial complex. The true conditions for a broad-scale

expansion of production of consumer durables are only possible in a market economy, based on free enterprise and competition--not in a command economy of military-industrial monopolies. Therefore the alternative program of moderate investment is also justified from the perspective of administration.

The contemporary production of civilian goods, in short, cannot be created in the "backyards" of the defense sector.

Moreover, the transition to a market economy inevitably generates problems not only with respect to changes in institutions for administering the newly created production of civilian goods, but also in institutions for managing the previously functioning capacities in the defense sector that produce consumer durables and equipment for non-military utilization. Although the diversification of enterprises that produce primarily military goods is entirely feasible within reasonable limits, one cannot find a single example where a military-industrial complex had to divert two-thirds of its capacity for the production of civilian goods--as is now proposed by the Soviet conversion program.

The military-industrial complex already constitutes the core of the Soviet economy, consuming the larger and most qualitative part of resources and producing not only an enormous quantity of weapons, but also the majority of durable goods (excluding automobiles). In 1988 the defense sector acquired 180 enterprises from the former Ministry of Machine-Building for Light Industry, Food-Processing and Household Appliances. A further expansion of the "sphere of responsibility" of the defense sector will become

dangerous not only for the country as a whole, but also for the defense sector itself: under these circumstances it will take over so much of the Soviet industrial base that it cannot realize its own priorities.

As an alternative to this line of economic development, it could be proposed that many enterprises be excluded from the defense sector: 100 percent of the enterprises of the Ministry of Electronics Industry and the Ministry of Radio Industry, 70 to 80 percent of the Ministry of Aviation Industry and the Ministry of Ship-building, at least 70 percent of all scientific-research and design organizations in the military-industrial complex. Thus only 20 to 30 percent of the enterprises currently subordinate to the defense sector should remain there; the remaining defense enterprises should be narrowly specialized on the production of weapons and military technology.⁶⁸ The excluded plants should be transformed into independent concerns, small and middle-sized enterprises (including joint ventures, leased firms, joint-stock corporations, and cooperatives), which can be unified in regional associations.

The State Program for Conversion not only does not foresee a significant reduction in the number of defense firms, but does not create the necessary conditions for change in the institutional status of military plants. In fact, at more than 80 percent of the plants, military and civilian production is combined in such a way

⁶⁸Problemy prognozirovaniia, 1990, vyp. 2, p. 29.

as to make their separation all but impossible.⁶⁹ Only six enterprises have been completely freed from the production of military goods. It is therefore proposed that the defense sector retain total control over its innovation potential (R&D, high-skilled personnel, and quality materials); as a result, it is now planned to leave within the defense sector even such "pure" civilian enterprises as those that manufacture televisions and radios to ensure that these firms not be deprived of the opportunity for spin-off effects and for sustaining a high technological level of production. In the opinion of those who prepared the conversion plan, "the combination of military and civilian potential represents the optimal variant as well from the perspective of preparations for a special period."⁷⁰ Of course, this also preserves the opportunity for cooperation between defense and civilian enterprises for the production of dual-purpose products, prototypes of civilian goods and implementation of innovations.

⁶⁹Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 13.

⁷⁰Ibid.

8. CONCLUSIONS.

An analysis of the social-economic preconditions, consequences, supply of resources and mechanisms for demilitarization of the Soviet economy lead to the following general conclusions.

1. The precondition for a broad-based demilitarization of the Soviet national economy, with a radical reduction in military spending, the army and its weaponry, have long since developed. The urgency for developing these processes are such that, within certain limits, their course runs independent of the international situation, or the reform of Soviet society and its state structure. Under conditions of mounting economic crisis, the reduction in weapons production as well as certain other processes of demilitarization can acquire a spontaneous, uncontrollable character.

2. An analysis of the state program for conversion, which reflects the conception for its unfolding over the next five years, shows conclusively that the anticipated social impact--even under the most favorable situation--will not be felt by the broad masses of the population. It will not have the comparable effect, for example, of the military cutbacks under N. S. Khrushchev, which led to a sharp increase in housing construction that could be directly felt by the general population. At the same time, under present conditions the inadequate system of social services means that negative consequences of conversion (especially unemployment) will have a strong impact upon broad strata of the population.

Under conditions when the threat to the economic stability of the country is greater than the threat to its defense security, the

following declaration by M. S. Gorbachev is all the more understandable: "The forces of the military-industrial complex must be deprived of the possibility of speculating on past approaches, when the Soviet Union allowed itself to be drawn into an arms race and the cold war."⁷¹

3. Under conditions of a deficit economy, the forecasts of the State Program of Conversion--with respect to the production of durable goods and equipment--are substantially inflated, not only because the sources for financing are absent, but above all because metal, material resources and construction capacities are also wanting. Although an analysis of the social significance of the program demands an increase in the production of civilian goods, this study shows that the supply of requisite resources require just the opposite--viz., a reduction in spending and expected results. In the contrary event, the investment in the program will be buried in construction projects and unneeded scientific and design work, and will not lead to the desired increase in the production of civilian goods. The idea of conversion will prove to be barren and quickly lose the support of society.

4. It is necessary to synchronize the implementation of conversion and economic reform. During the transition to a market economy and to the principles of free enterprise, the scale of conversion and forms for its realization should not impede the development of these processes, but rather emerge as the source of means for their realization and promote the growth of confidence

⁷¹Stolitsa, 1991, April, no.13 (19), p. 1.

and trust in reform, in demilitarization and de-monopolization of the economy, in competition and high receptivity to achievements in technological progress. Without all these, a high level of production is unattainable, no matter how good the innovation potential might be.

5. The conception of conversion in the USSR requires further work, for in a decisive degree it shall determine the future of the Soviet economy. At the macro-economic level, quantitative studies are needed for conversion variants which seek both a significant reduction in weapons manufacturing and in the army as well as simultaneous cutback in the outlays to finance conversion.

It is also necessary to prepare variants in the structural policy with respect to conversion. The purpose is to conserve the accumulated wealth of the country to maximum degree possible and to promote its defensive capabilities at a level of reasonable sufficiency. This variant would also be oriented toward social progress on the basis of universal human values.

The study of new variants to the conversion strategy, to be sure, presupposes the participation of broad segments of public opinion. However, at the present time conversion in the USSR is almost exclusively controlled by representatives of the defense industries, by military and party functionaries, who are not always capable of comprehending economic priorities and social goals. For example, of the members serving on the Committee of the Supreme Soviet of the USSR on Questions of Defense and National Security (which is summoned to exercise parliamentary control over the

process of conversion), 57% come from the defense industries, 21.5% are military personnel, 21.5% are leaders of party organs, etc.⁷² The situation is not altered substantially by the draft version of the Law of the USSR for Conversion of Defense Industry," which, as an adjunct to the Supreme Soviet to manage conversion, would create a "State Commission for Conversion" with the participation of central organs, ministries, the Academy of Sciences and the Central Council of Unions.⁷³

In a meeting with scholars from the Institute of Economics of the Soviet Academy of Sciences, the Nobel laureate Paul Samuelson recounted his experience while serving on the Commission for Reconversion. The commission had been created in 1941 to prepare, well in advance, for the eventual reconversion to a civilian footing in the post-war period. Significantly, he said, many of the commission's conclusions were in fact not borne out. For example, the commission predicted the inevitability of a prolonged post-war economic recession as well as sharp increase in unemployment because of the fall in military production. Instead, it proved possible to achieve a growth in investment, consumption and employment. Such mistakes, declared Samuelson, nevertheless demonstrate the utility of seeking to forecast the course of conversion well in advance.

Although mistakes in conversion are evidently inescapable, it is nevertheless essential to proceed resolutely, constantly correcting the program of concrete actions in the light of accumulated

⁷²Kommunist, 1990, no.9, p. 101.

⁷³Voprosy ekonomiki i konversii, 1990, vyp. 4, p. 48.

experience.

PART III. MANAGERS IN MILITARY INDUSTRY.

Eleven months separate the rumored coup d'etat in September of 1990 from the failed coup on August, 1991. Only eleven months, during which such political showmanship never let up in the Soviet capital. Eleven months during which came to pass the resignations of Shatalin and Yavlinsky, of Shevardnadze, Bakatin and Ryzhkov, under the sole pressure--it has been widely assumed--of the military industrial complex.

Who are these men who, through the unification of their force and their wills, are capable of swinging the pendulum on the course of their country's history? How does an influential movement carve out its own niche in the USSR, when the structures of professional and administrative relations have been firmly established over seven decades of communist rule and when these structures function implacably? How do the vanquished collaborators of a failed coup d'etat continue to exist when they must readapt to new power structures?¹

1. THE ELITE.

The military industrial complex is known to be the most secretive core of the USSR--more of a mystery than even the KGB, notwithstanding the fact that the two have always been linked by

¹The conclusions of this paper are the results of fifteen interviews obtained between July and October of 1991 with the directors of either military-industrial complex factories or design bureaus (KB).

scientific espionage;² it is even more clandestine than any army corps -- case in point, none of the directors of large military factories has ever really defected.³

Intimately tied to the decision-making process, the military industrial complex has always been one of the principle actors in Soviet politics. Those decisions which have often appeared to be irrational in the eyes of the West have often been the direct result of pressure from certain bureaucratic clans. Khrushchev once recalled in his memoirs how certain decisions with regard to arms sales to foreigners were the result, not of any rational analysis of the optimization of forces, but of concessions made to pressure groups.⁴ Similarly, under Brezhnev, the Politburo, having decided not to sanction the construction of cruisers for the navy, had to reverse its decision.⁵ Even later, in 1985, when Mikhail Gorbachev was already in power, the Minister of General Machine

²The Second Principal Directorate of the KGB, under the direction of Titov until the failure of the coup, was in charge of general production of the military industrial complex. The Third Principal Directorate was put in charge of military counter-espionage, the military infrastructure, and consequently of the surveillance of military factories. As for the Sixth Principal Directorate, responsible for economic counter-espionage, its links with the complex are clear.

³The superior officer, better known by his code name "Farewell", transmitted very useful intelligence information about the defense complex. However, this information never concerned more than a single aspect of VPK, aka. scientific espionage.

⁴Thierry Malleret, working draft, Institute for East-West Security Studies, May 1991.

⁵Case cited in Valenta (J.) and Potter (W.), eds. Soviet Decision-Making for National Security, London, George Allen and Unwin, 1984, p.76.

Building had put into the planning stages a new type of color television set to be called Beriozka.⁶ A former head of the Planning department remembered how Vladislav Sokolov, the director of the Kommunar factory in Kharkov, was firmly opposed to this initiative: this new generation household of electronic equipment would require large investments for which the government had not prepared itself. In 1986, the director of the factory made three separate visits to Moscow during the year to negotiate with his ministry for a production report which was not even started until the end of 1987.⁷ As a result of obsessive secrecy and the Post Office Box system, the actual extent of the military-industrial complex is very difficult to estimate with accuracy. According to Julian Cooper, the defense complex, as it existed in 1988, employed approximately 7.6 million industrial-production personnel--approximately one-fifth of the total personnel employed in mining or manufacturing.⁸ Some 4.2 million were engaged in military production, and, in addition, 550,000 were employed directly in military production. This represents approximately 13% of the total industrial employment.⁹ However, this 13% represents an average of the whole population of the

⁶The Ministry of General Machine Building (Minobshchemash) was above all else in charge of strategic missile production but had always occupied himself with the production of television sets, refrigerators and tramways. cf. Le Monde, March 26, 1991.

⁷Transcription of interview with Alexander Martynenko, Kharkov, September 19, 1991, pp15-17.

⁸As compared to 2.2 million in the U.S. [In 1991, Soviet media were stating military industry employment as being 12 mill. people. V. K.]

⁹Soviet Economy, vol.5, no.4, pp.355-356.

USSR. Considering the fact that armaments production is heavily concentrated in the RSFSR, in the Ukraine and in Kazakhstan, the share in these places is much higher.¹⁰ (See table 3.1)

1.1 Group Attitudes.

One of the reasons for the strength of the defense complex would have to be the true solidarity among its representatives. The older generation has been both molded by and bonded together through shared experiences. They have witnessed together a World War, a Cold War and an Arms Race; they have felt the same rivalry, the same desire to excel. They have survived the same terrors under Stalin, the same disillusionment under Khrushchev, the same expansion and well-being under Brezhnev. Now, they are still tied to each other, forming an amazingly strong and stable structure of rigorous administration in the economy. The roots of this structure originate far outside the economics.

From the point of view of labor compensation, their attainments are such that it is understandable why the engineers and directors concerned should fight to preserve them. One often speaks of the privileges afforded to the men of the complex--for example, generous salaries and better access to goods and services, including quality health care, vacation facilities, housing, etc. Even more precious still, apart from advantageous wages, salaries, and employment benefits, the defense industries have been

¹⁰Leningrad, for example, has more than 150 defense plants and one worker in four there is employed by the defense industry. The Economist, December 15, 1990.

traditionally well-off in terms of labor motivation. Unlike the bulk of civilian sectors, desperately lagging behind the world-wide trends in technology innovation, military production is much closer to a competitive edge. Therefore, it provides better challenges to the creativity of the R&D personnel, engineers, and highly skilled blue-collar manpower. The majority of the defense managers have followed a specific course. From the beginning of their studies until the end of their careers, most of them have kept working all their lives in only one field.¹¹ They were thus accustomed to being invited to all sorts of high-ranking meetings and discussions, where they gradually familiarized themselves with the inner workings of the power structures. They therefore gained a certain influence over strategic decision-making with regard to the entire military-industrial complex.

With the exception of Vladimir Shimko, former minister of the radio industry who came from the technical sector of the Central

¹¹Take Nicolai Shomin for example: A Lenin Prize winner, a champion of the socialist order, he is one of the principle designers of tanks in the USSR. Born in 1923, a 1940 graduate of the Tank Institute of Kharkov, he fought in 1941 in a T-34. Twenty-two years old when victory over Germany was declared, he continued his studies this time at the Military Academy of Armored Tanks and Mechanized Forces. With his engineering degree in hand, he found his first job in a design bureau in the Urals, a design bureau which was indeed a significant one in that it was directed by Alexander Morozov, designer of the famous T-34. He soon became Morozov's assistant, was then appointed to another position in the missile industry where he worked on the construction of intercontinental missiles. In the sixties, the USSR was far behind the U.S. Nikolay Shomin contributed to the development of the industry and helped it to catch up. He then returned to Morozov, whom he replaced upon the latter's retirement. For many years, Shomin has been an infallible advisor to the CPSU Central Committee on the issues of defense production. Krasnaia Zvezda, September 22, 1990.

Committee apparatus, the majority of the representatives of the VPK began their careers as either directors of laboratories or armament factories.¹² Consequently, they are highly specialized in their own field, but can only respond for microeconomic problems.

Let us take for example Oleg Baklanov, former Minister of General Machine Building, who took part in the coup last August. Born in 1932 in the Ukraine, Oleg Baklanov graduated from the Power Institute in 1958 and obtained a PhD. in Technical Science in 1969. From 1950 to 1963, he worked as a fitter, foreman, deputy shop and deputy chief engineer at a military factory in Kharkov. Then, from 1963 to 1975 he continued on in Kharkov as a chief engineer at an instrument plant where he was responsible for the production of ballistic missiles and spacecraft during the 1970's. In 1976 he turned to a political career and became Deputy Minister of General Machine Building. He took over the position of Minister of General Machine Building in April of 1983.¹³ Oleg Baklanov was elected a member of the CPSU Central Committee in 1986; his subsequent promotion to Central Committee Secretary in 1988 thus came as somewhat of a surprise, considering his lack of experience in Party work. Since then, he has been in charge of supervising the conversion of military production into civilian production. Defending Gorbachev's policy of disarmament, he often visited enterprises and scientific organizations in order to deepen his perspective and

¹²Michael Tatu in Le Monde, March 26, 1991.

¹³Alexander Rahr, A Biographical Directory of 100 Leading Officials, 4th edition, Radio Liberty, 1988 and Pravda, June 29, 1990.

contacts. In the military factories of Kharkov, these contacts at a local level were to Baklanov intrinsically fundamental.¹⁴

A perusal of Baklanov's writings and interviews on the subject of military conversion gives an impression of the man as a true democrat, one who sincerely took into account the costs of conversion to the enterprises and, more specifically, how these costs would effect the workers and the society: "To reorient (pereprofilirovat') military production, we must solve many difficult problems. First of all, we must think about the people, by whose hands, knowledge and talent the defense capacity of the country was created," he wrote in 1989.¹⁵ In a Pravda interview on June 29, 1990, Oleg Baklanov supported the introduction of market forces, he explained the urgent necessity of retraining workers and modernizing factories, and he noted the already proven success of the program to transfer scientific-technical expertise to the civilian sector.¹⁶ However, this person has hardly sincerely shared the ideas that could put economic and political pressures on VPK.

A true master of words, Oleg Baklanov had trained himself during those many years in the military factories to show discipline and a profound respect for the politicians. From there it is possible that he played a role during those past years of power, blindly following the political restructuring of Mikhail Gorbachev,

¹⁴Pravitel'stvennyi Vestnik, no. 17, August 1989, p. 7, and Pravda, June 29, 1990.

¹⁵Pravitel'stvennyi Vestnik, no. 17, August 1989, op.cit. p. 6.

¹⁶Pravda, June 29, 1990. See also Pravda, August 18, 1990.

justifying the politics of conversion against his own will and ideas.¹⁷

1.2 Discipline.

The West has a tendency to exaggerate the power of the managers of the military-industrial complex. If these managers have an influence with regard to the core members of the URSS (specifically with regard to the Central Committee of the Communist Party)--an influence with which nobody else can even come near--it is because they are the guardians of a technology which is essential to the survival of the nation. In addition, they encompass a social force which is by no means negligible--each of these factories hires between ten thousand to thirty thousand people.

Nevertheless, there is not a single one defense director who is not under the submission, as a last recourse, toward his ministry and toward the will of the military. If the studies--today classical--of Soviet management methods had shown that the enterprises were not passive in front of the plan and that they know how to manage their developmental strategies--in exaggerating fictitiously the cost of the investments--this is not the case on the side of the military factories.¹⁸ The military factories only manufacture one single part of a product which is then assembled in

¹⁷This is the opinion of Leonid Ivashov, head of the department (upravlenie delami) of the Ministry of Defense of the USSR, interview conducted September 5, 1991, p.11.

¹⁸Berliner Joseph S. (1957), Factory and Manager in the USSR, Cambridge, Harvard University Press.

another city. Each piece contracted--whether mechanical or electronic--has a specific destination--in a tank, in a radar, or in a missile. Consequently, the director cannot, as he would be able to do in the civilian industries, falsify his accounts (pripiski).

Let us take for an example the Kommunar company in Kharkov in the Ukraine. This enterprise is dependant upon the Ministry of General Machine Building (Minobshchemash)¹⁹ and is in charge of, from a military perspective, the fabrication of command systems for missiles and special vessels (which are then assembled in Dnepropetrovsk), and, from a civilian perspective, the production of television sets.

The total volume of production in rubles was 200 million in 1987 and was marked by a strong tendency towards an increase by virtue of the augmentation of 1). contracts, especially those in the civilian sector, and 2). prices of the raw materials needed for production. Although the volume in rubles of civilian production corresponds to half of the total volume of production, only 10% of the employees (two workshop's worth) were working to produce television sets. The others were dependent upon military contracts and were thus interested in completing the plan within a given time-frame.²⁰ The dependence upon State contracts is such that the director of the enterprise, forced to pay the salaries of 18,000

¹⁹In Kharkov, one of the most important centers of military-industrial production, there are four such factories dependant upon this ministry

²⁰So much so that they received a secret premium equivalent to 10% of their monthly salary. Transcription of interview with Alexander Martynenko, op.cit. pp. 2-4.17.

employees working in the military sector, logically transforms himself into an executive manager.

Inside his own enterprise, the director does not have at his disposal total power. In comparison to civilian industries, the framework of the military factories plays much more of an autonomous role and shares a much larger responsibility.

The first counter-power is that of the KGB. In the team whose function it is to support the general director, one of the vice-directors (zamestitel' po rezhimu) is generally chosen among the colonels of the KGB. He is paid by the enterprise but is in charge of representing the interests of the State Committee for Security within the departments of the KGB of the enterprise. If the Soviet enterprises have at their disposal all of a First department working for the needs of the Committee, the military-industrial industries are comprised of three such committees. In the offices of the Kommunar enterprise, the first department is in charge of confidential information; the second department deals with secret communications; the third is responsible for recruitment. These three departments are subordinated only to one vice-director (zamestitel' po rezhimu), who answers in turn to the KGB. The relationships with the general director are only of an informative nature and in no decisive way: in effect, the representatives of the KGB never get involved with the production in the factory.²¹

Things work a bit differently with the "military representa-

²¹Transcription of interview with Alexander Martynenko, op.cit. pp.23-25.

tives" (voennye predstaviteli), who are responsible for the reception and expedition of military commands. Just like the members of the KGB, the military representatives form an independent enclave amidst the framework of the factory. They do not bear responsibility for their acts except for in front of the army and they do not accept orders from anyone, not even the general director.

Frequently, the interests of these two--those of the general director and those of the military representative--will clash. The prices are used to being set arbitrarily, that is without caring for the profit margin for the contractor. Within the enterprise, the dialogue begins thus between the military representatives who must defend at all costs the interests of the customer and the board of directors--the vice directors accompanied by economic and technical department heads--who try to prove that the benefits are too small. Most of the time, the debate ends with a lowering of costs of production and a reduction of the numbers of salaries foreseen; rarely will it end with an increase in the ministerial envelope.²²

The problem of the non-compliance of precalculated costs with real costs of production has substantially aggravated in recent years. The military and the VPK ministries tend to increasingly ignore the price hikes on the investment goods markets. The defense enterprises fail to make ends meet each time they commit themselves to military orders. Since rigorous discipline so typical of former times has vanished, VPK contractors nowadays indulge in rejecting

²²Idem, pp.11-13.

defense orders. They do this each time the State does not provide them with basic materials, component parts, and other semi-products at as cheap a price as was precalculated by the customer.

The military representatives are responsible for the quality of the production sent to the client (zakazchik). Thus, every element is supposedly verified two times: a first time by the workshop supervisor and a second time by the military representative. The two risk their jobs in case of outside deficiencies (at Baykonur, for example, in the missile launching platforms and on the testing sites).

Brought up in the tradition of democratic centralism, fervent partisans of the system of administrative command, the defense managers direct their enterprise with a firm hand. All of the testimonies of employees working in the large enterprises of the complex agree that the directors are, for the most part, rigid, authoritarian, and intolerant. Paradoxically as it may seem, the employees in the air-tight environment, though often paid generously in comparison to other branches of civilian industry, are treated rudely and often with suspicion, and they are incapable of legally defending themselves against such abuses because they are removed from and misunderstood by the outside world.²³ Defense plant managers report, however, that many of their workers have

²³This is, in any case, the opinion of Lev Shemaev, former advisor to Boris Yeltsin on matters concerning the military-industrial complex and a former high official in the enterprise NPO Kibernetika. Interview given in Moscow, January 31, 1991.

left and found jobs in cooperatives or joint-ventures.²⁴

Thus, a growing disenchantment in traditional values of socialism, in Soviet military policy, as well as in an overcentralized system of technology innovation, planning and management has resulted in a deteriorating atmosphere within the defense plants and design bureaus. Even the most elite industries, such as the space and aircraft industries, are not immune to this trend.

The agency Postfactum has published the testimony of an aerospace engineer, Nikolay Melnikov (a 58-year-old specialist in cruise missiles), which confirms the fact that the military-industrial complex is losing its main assets--the finest Soviet engineers and other highly trained staff.²⁵

In 1959, the young Melnikov began his career at the Aircraft Research Institute, an extremely prestigious research center associated with the names of Tupolev, Ilyushin and Lavochkin for having tested there the different types of cruise missiles they designed. In the first years of the Cold War, the USSR had set itself an absolute priority: to become a military and technological power. For more than two decades, therefore, it spent without counting. Enormous resources had been allocated to the defense economy while the nation was engaged in the rise toward world-wide military superiority. During this time, an enthusiasm and a rivalry prevailed which would gradually dull over the years.

²⁴Council on Economic Priorities, October, 1990.

²⁵Postfactum No.7/May, 1991, cited in Soviet Bulletin Board, June 13, 1991, pp.24-28.

The first warning came in the early seventies when a major distortion in the Soviet innovation processes occurred. As the emphasis was put on technological espionage, the thrust for breakthrough innovations gave way to an adaptation of Western technological secrets to the Soviet economic and managerial milieu. The system, spoiled by rather easy access to Western intelligence, favored test laboratories rather than research institutes carrying out fundamental projects. The enthusiasm of scholars and engineers, who were no longer required to pave the road to the unknown, very quickly vanished to make room for a bureaucracy with its inevitable administrative clumsiness. "In this way, an ordinary degradation commenced, one that was moral, scientific and technological," writes Melnikov.²⁶

²⁶Postfactum No. 7/May, 1991, op.cit., p. 25.

2. THE INDUSTRIAL-MILITARY PERPLEX

The defense complex is the most important reservoir of brain-power in the USSR. Even during the periods of massive purges, Stalin was keen to preserve the lives and working abilities of the gifted scientists, technicians, engineers and managers involved in the defense-related R&D and military production. After several decades of tough ideological control and political pressures, the sociological profile of the military-industrial complex assumed its modern shape. Its men are obedient to the system and yet have become fully aware of their political strength. The latter obviously influences political decision-making even at the upper level of Party hierarchy. Indeed, no secretary general has been able to allow himself, out of fear for the safety of his future political career, to make cuts on the army, his most precious property. No one has ever dared to touch those men who had within their power the ability to place the USSR on the level of a great military and space power--the one and only glorious sector the country has ever known.

The efforts made in favor of an administrative system reform could not have been done without consequences in terms of the fears of these military-industrial representatives who were already suffering from several misfortunes.

2.1 The political class brings disappointment

In April 1985, a month after his arrival to power, Mikhail Gorbachev defended the twelfth Five Year Plan, a plan which aimed to accelerate economic growth and technological progress and--most importantly from the VPK's point of view--seemed to preserve the political system in its place. The reform strategy changed radically just after Gorbachev's speech at the United Nations in December of 1988, when the Soviet General Secretary announced unilateral cutbacks in military efforts. This radical program called for reducing the strength of the Soviet Armed Forces by 12% over a two-year period (1989-1990), for trimming the military budget by 14% and for cutting military production by almost 20%.²⁷ In May 1989, the First Congress of People's Deputies asked the Gosplan, the VPK (Voенно-Промышленная Комиссия), the defense ministry and the nine ministries there within, to study a governmental conversion program.

Because he dared to place the defense bureaucrats in this highly critical situation, Mikhail Gorbachev lost forever their support. In fact, all of them, without exception, reproach him for having confused political and economic measures: "If Gorbachev had not been able to open the floodgates and authorize the debate on the street," writes Alexander Vladislavlev, vice president of the Scientific and Industrial Union directed by Arkadii Volsky, "no one would ever have had the idea of structural change. Today," he continues, "all the unhappiness comes from the fact that the

²⁷Trud, December 8, 1989.

political reform has gone so far that it has become almost destructive."²⁸

Alexander Vladislavlev then goes on to explain that Gorbachev has made many mistakes, four of which he considers particularly harmful. First, Gorbachev has underestimated the power of the economy and imagined that the transition to a market economy would take place rapidly and smoothly. Second, he confused politics and economics and did not provide any structure with which to replace the system of administrative command, which is now unserviceable. Third, he has been too weak and has conducted reforms much too feebly. Finally, he has lost all power and influence over economic mechanisms, as well as over the people: "There can't be any opposition in the country because there is no power," continues Alexander Vladislavlev.²⁹

The defense directors are feeling more and more excluded from the path of reforms. Above all else preoccupied by the battles for influence which are opposing the Russian center, these men of politics are forgetting the realpolitik that they so thoroughly mastered and are playing instead with words like market economy and the end of the military-industrial complex as they had with the vulgar themes of propaganda.

Thus, the situation is heading toward catastrophe. The provisions are not as efficient as in the past, but the vertical ties are still as rigid: it is still more efficient to make a contract with the enterprises of the same industrial branch (dependent upon

²⁸Nezavisimaya Gazeta, April 20, 1991.

²⁹Idem.

the same ministry in Moscow), without taking into account the costs and delays, than to get along well with a competitive neighbor which is dependent upon another ministry. In Moscow, decisions are made arbitrarily, without consulting the enterprises which are nonetheless the first ones interested by economic reform. The doubts and the disarray are rising among the complex directors who decide to make heard their voices, to break the barriers artificially imposed by the ministries by creating a resource of internal aid at a local level.³⁰ Even in 1989, the association of directors of the military-industrial sector flourished: accounted for within are more than a thousand in just one mechanical construction sector.

The association of Alexander Tiziakov--which took part in the 1991 August coup d'etat--was created on November 16, 1989 as a result of a founder's congress in Sverdlovsk where 300 directors representing 100 different regions (oblast') got together. The congress named itself the Association of State Enterprise Directors and gave itself as an objective to develop an important regional structure.³¹ All of the large industrial cities are represented, and all have at their disposal an identical structure within the core of their region (oblast') or city. During these meetings, the different parties exchange above all else their services: transportation or provisions of high quality materials. They evoke the

³⁰Transcription of interview with Sergei Kaysin, op.cit., p.6.

³¹In April of 1990, the association was renamed the Association of State Enterprises.

latest orientations of reforms and their consequences upon the enterprises themselves; they put one of their own people in charge of representing the interests of the group during their next visit to the ministry; they determine the amount of aid to be given to the kolkhozes; and they regulate their contracts with the West.

In this period, the perspective of the transition to a market economy is still uncertain. It is thus the private entrepreneurs who reap the greatest benefits from such a still embryonic market. They create cooperatives, stock exchanges and banks... But the managers of the complex refuse to seize the opportunity to develop enterprises within their own sector. They prefer to whine about the abuses of a savage capitalism. During the fall of 1990, forty-six directors of large defense enterprises signed an open letter calling for the preservation of the centralized system of allocations during the transitional period.³²

During this time, Boris Yeltsin became the principle political target of the defense managers. The former First Secretary of Sverdlovsk Regional Party Committee--one of the most important military-industrial cities--is distraught: the repeated attempts to convince Mikhail Gorbachev to do away with the Gosplan and the VPK are understood as so much provocation³³. More than a simple race for power, the managers see that within the war of programs which divides Yeltsin from Gorbachev lies a true alternative to the mono-

³²Pravda, September 6, 1990.

³³Transcription of interview with Sergei Kaysin, op.cit., p.18 and Demokraticeskaya Rossiya 3/1990.

poly held by the ministries, an attainment of economic power for the central government.

From his side, Ivan Silaev, who had asked for their support during his election to the post of Vice President of Russia--and who had received this support--showed himself to be incapable of putting into practice the promised reforms, most notably in the institutional domain. His support of Yeltsin and his 500 Day Plan was perceived as a true menace to their survival.

Later, Yavlinsky's legal project concerning privatization was severely criticized. Different associations--of which was that of Tiziakov--create an insurgency against the project and organized a work conference in Moscow. They invited Maley, President of the Committee for the Party Ownership, who broke immediately from the project and announced that "the committee will concern itself with revising it." He did this alone, without the help of the directors who thought themselves to be nevertheless of precious little utility. The lack of tact would put into play, once again, his political defavor.

In the spring of 1991, not content to work within the military budgets because of a rapprochement with the West, the political class lent itself to the signing of a Union Treaty which would recognize the sovereignty of the republics and thus offer them a boost in the economic and political arena. We now know that this was the last straw of discontent which drove into being the coup d'etat. The Soviet press tried once again to present the military--industrial complex as a monster of conservatism. It is necessary,

nevertheless, to note three differing attitudes at the time of the coup d'etat which run from the most conservative to the most liberal and which correspond, in effect, to the three tendencies of the VPK.

2.2 The losers: Tiziakov and the hard-liners.

In November of 1989, Alexander Tiziakov was elected unanimously as the president of the association.³⁴ He was, at the time, the perfect representative of his associations's directors: conservative and reactionary because the political and economic environment did not yet give them the occasion to show their talents as managers; loyal to democratic centralism, frightened by the simple idea of having to adapt to a new system.³⁵

An economist by training, Alexander Tiziakov directed, since 1977, the Kalinin factory in Sverdlovsk. More so than the new politics of conversion, it was glasnost that pushed him to enter into a political career in 1989. "He was very shocked by the wave of articles that denounced the crimes of Stalin," explains Vladimir Volkov, former CPSU secretary in the Kalinin factory.³⁶ "Not only was he a Stalinist in his soul, but he believed it was best to hide his wrongdoings from the Soviet people."

In 1989, during the creation of the association, the majority

³⁴Interview with Sergei Kaysin, member of the central soviet of the association, in charge of coordination between the members, Moscow, September 7, 1991, p.1

³⁵Idem, p. 2.

³⁶Interview taken in Moscow, August 30, 1991, p.3.

of directors present at the Congress were fully supporting the point of view of their president. They would applaud for a long time his initiatives. From the views of those who supported him, Alexander Tiziakov possessed a true strength of conviction and took to heart the problems of the enterprises. In 1991, for example, during which time the Prime Minister, Valentin Pavlov, was deciding upon spiraling price increases, Alexander Tiziakov used his influences to negotiate a larger compensation of salaries.³⁷

Ideologically paradoxical, Alexander Tiziakov supported the necessity of a market economy: "He always insisted upon the fact that we had been the first ones to support the politics of transition to a market economy," explained Sergei Kaysin. Without a doubt, we must see here the expression of a discipline over language within the ranks of the Party. The fact of the matter is that in March of 1990, during which time the government of Nikolai Ryzhkov was adopting these new politics, Tiziakov's association was the first to applaud.

The Tiziakov's association took its political turn in July, 1990. Supporting the new phase of perestroika which is the transition to a market economy, Alexander Tiziakov organized a conference in Sverdlosk around this same theme. 1200 directors and representatives of the local authorities were present. But neither Abalkin nor Aganbegyan, nor any other Supreme Soviet deputy--nonetheless invited--gave the honor of their physical presence. Most of the directors saw this absence as a new offense, especially since the

³⁷Interview with Sergei Kaysin, op.cit., p.20.

conference had been carefully prepared and since it had aimed to propose to the government a certain number of alternative projects in which the members of the conference placed a lot of hope.³⁸

In the fall of 1990, the directors of Tiziakov's association organized a new congress in Moscow and invited Mikhail Gorbachev. We now know today that they pressured him to abandon his 500 Day Plan. A few months later, while the new Prime Minister Valentin Pavlov was in the midst of forming his new government, Alexander Tiziakov was once again in opposition to his reforms. The new government wanted to reduce the number of ministries in the military-industrial complex: thus were the plans to join together the Ministry of Aeronautic Industry with the Ministry of Machine Building, in charge of space (Minobshchemash). It was thought that such a decision would not bother the defense directors because the budgets remained the same, but this was wishful thinking because each branch of the military-industrial complex had at its disposal its own secretary of states (glavki), its own institutes, and its own schools. The joining of two ministries would drastically reduce the number of people working in each. Using his forces of persuasion, Alexander Tiziakov, supported by the majority of his association's members, succeeded in prolonging the decision.³⁹

Alexander Tiziakov would conserve up until the time of the putsch his communist ideals. He feared that perestroika would

³⁸Alexander Tiziakov entered nevertheless in the Aganbeyan group just shortly after this conference and collaborated with the alternative elaboration program of the 500 Day Plan.

³⁹Interview with Leonid Ivashov, pp. 8-10.

bring about capitalism in the USSR", explains Sergei Kaysin, one of his closest colleagues, "and had decided to fight against the reforms already started. His biggest fear was that the privatization of property be voted into effect. He thought that Western investors and the kings of the parallel economy in the USSR would be the first and the only capable of investing once the law of private property would be adopted. He constantly repeated that property could be only of the state, that it was the guarantee of our strength in the international scene."⁴⁰

Little by little during this time, Alexander Tiziakov was detaching himself from his colleagues and from their preoccupations. Too absorbed by administrative and political red tape necessarily required by the association and by the problems of conversion which absorbed the factory, he no longer had any time to either visit the work spaces or discuss with the factory workers themselves. The gap was widening between the majority of general directors, the members of his association, and himself. More and more, for a majority of such managers, there could be no future in a reactionary political combat: it would be counter-productive, as much within Soviet borders (as political institutions gather more and more weight and the decision-centers become diversified) as within the political scene, especially in the U.S. where there exists the greatest potential for investments. The directors have already turned toward the West and are busily researching potential partners.

⁴⁰Idem, p. 4, and Izvestiia, October 5, 1991.

On August 26, 1991, Kravtsov, the first Vice-President of Tiziakov's association and Sergei Kaysin, in charge of the coordination of the associations, resign with the urging of the association. Kravtsov, who became president after the arrest of Tiziakov, proposed, during a closed session of the praesidium of the association's central soviet, a junction with Arkadii Volsky. The association of Alexander Tiziakov at the time was at its nadir after the failed coup d'etat. Arkadii Volsky was, according to himself, very well connected in the Kremlin as well as in the different ministries of the military-industrial complex, but he was dealing with a local level. Often, in the regional assemblies, the scientific and industrial union of Arkadii Volsky was represented by only one scientist, when the directors of the largest regional enterprises were grouped together at the heart of Tiziakov's association. For Kravtsov and for Kaysin, to join together the two associations into one meant to double the capacities of the two simultaneously.

But to do so, the presidium would have to resign and submit to his rival: the refusal was categorical. The heads of the association argued the fact that a resignation on their part would unveil to the entire world their solidarity with Alexander Tiziakov during the putsch. None would accept, above all, to lose face in front of Arkadii Volsky, the triumphant one.

2.3 The political game: Volsky and the Gorbachev loyalists.

A true tentacular network, the complex is situated outside of the Party. This does not mean that it is not close to the CPSU. On the contrary, the links between the CPSU and the defense complex have always existed, for obvious reasons of political strategy. The high-ranking defense workers have always been involved in the national security strategy, taking into account military, political (including ideological) and economic dimensions. They have been discussing domestic resource constraints, objective and subjective goals, and programs to be implemented which would produce both threat reduction (diplomacy, propaganda, arms control and espionage) as well as military services.⁴¹

While the representatives of the complex are privy to important posts in the Party, the apparatchiks, by contrast, rarely have careers in the strategic industry. A political career in the USSR requires, above all, an absolute obedience to the hierarchy and to party discipline, whereas a career in the heart of the complex requires discipline, to be sure, but above all it requires a top-level professionalism with regard to managerial skills and/or abilities. This segregation explains why most of the defense directors refuse to consider Arkadii Volsky as one of their own.

A 58-year-old with a 1955 diploma from the Steel Institute of Moscow, Arkadii Volsky spent his engineering career as a specialist in automobile construction. After having worked for nine years in

⁴¹See the memoirs of Vannikov, Soviet Defense Minister under Stalin (before and during World War II) and Chris Davis, Birmingham University, paper presented in Moscow (IMEMO), November, 1990.

production at the Likhachev factory in Moscow, he became secretary of the Party and left the factory. In 1969, he was put in charge of studying the problems of this industry as a member of the Central Committee of the CPSU, where he was head of the department of construction of machine tools. In 1983, Yuri Andropov appointed him as his personal counselor on economic affairs. Then began his political career. He was elected the same year as deputy to the Supreme Soviet of the RSFSR. Next, he became deputy of the Council of Nationalities, then to the Supreme Soviet of the USSR and member of the Commission on Industry in 1985. A faithful spokesman for the concerns of the defense complex, he is considered a fervent supporter of Mikhail Gorbachev.⁴²

He acquired his popularity with the public upon his nomination in July of 1988 as head of the Nagorno-Karabakh's Committee on Regulation. Progressively, he is forging for himself an image as a reforming communist (on the model of a Bakatin or a Yakovlev). His televised presentations and his speeches at the congressional tribunal of the deputies of the people give him an occasion to demonstrate that he can be flexible. In a full-fledged national crisis, while the two sides are busy killing each other off, he is calling for more meetings between the two and extolling dialogue rather than force.

The announcement at the beginning of 1991 of the creation of an association of managers under his leadership has therefore given

⁴²Alexander Rahr, A Biographical Dictionary of 100 Leading Officials, 4th edition, Radio Liberty, 1988.

rise to much hope--hope of the end of the reign of the black colonels and hope of the arrival of a new era of dialogue. Does he not speak of privatization, of the opening of markets, and of commercial bridges with the West? All this, with one key stipulation--that 51% of the shares be remitted to managers...

At the same time, since February, 1991, the Arkadii Volsky's Union--associated with that of the scientific and engineering associations as well as with the Academy of Sciences and the GKNT (State Committee for Science and Technology)--has created a new academy of USSR engineers (which is already meeting) comprised of 139 academics and 144 corresponding members. The objective, clearly stated, is to rapidly constitute a network of groups, of laboratories, of scientific or KB establishments, in order to gather high-level information about the different researches and discoveries, as well as the different propositions made concerning regional and ecological problems.⁴³

On the eve of the coup, a new policy of resolution was emerging within the core of Arkadii Volsky's Union: it is necessary to create a powerful organization, he explained. A third force accompanied by a well-considered strategy and tactics.⁴⁴ ...To march faster and straighter, such was the motto of the association.⁴⁵

⁴³Inzhener, February 1991, p.1.

⁴⁴Nezavisimaya Gazeta, April 20, 1991.

⁴⁵Anders Aslund notes in April, 1991, that Arkadii Volsky is gathering around himself a team of scientific experts, luring in well-known economists such as Nikolai Petrakov, a former member of the Shatalin group in New York Times, April 19, 1991, p.A27.

2.4. The Technocrats: the example of the enterprise KVANT.

There is a third variation which has developed largely under the effects of the same disappointment, that of anticipation. The showering of reforms, the confusion which clouds the State structures tied to the military-industrial complex, disarmament and the debates over a conversion policy have inevitably pushed certain enterprises to react before the total suppression of State contracts (Goszakaz).

The KVANT enterprise in Novgorod, which specializes in radar systems perfected through a liaison with the aeronautic and space industries, is of this third variation.⁴⁶ Former Post Office Box No. 21, the enterprise, under the influence of its director Alexander Tsvetkov, refused to wait for the orders from its ministry (Ministry of Radio Industry): "From the moment of Mikhail Gorbachev's first visit to Reykjavik, it was clear that our situation was going to spoil," he confides. He thus anticipated the go ahead orders for conversion and multiplied, over a three year period, the ruble volume of his civilian production by three and a half times, succeeding to invert the proportional volumes of his military and civilian production.⁴⁷

Even though not a member of any association, Alexander Tsvetkov was able to multiply his contacts with the enterprises of his

⁴⁶Interview conducted in Novgorod on September 9, 1991

⁴⁷The civil production concerned essentially color television sets, audio cassettes, and parabolic antennas. Transcription of interview, pp.3-12.

domain. The principle objective was to supply himself with electronic parts (condensers and resistors). The supplies of the State (Gossnab) only foresaw 30 to 40% of the prime materials needed for a contract from the State (Goszakaz). To fulfill such official contracts today, he must use materials which are procured in a private manner, with the help of contacts gleaned outside of the habitual vertical relationships which tie him to the ministry. By forming a joint venture in 1989 with some Polish competitors, KVANT succeeded in honoring its contracts, and in fulfilling the plan.⁴⁸

The supplying of electrical parts is one of the largest difficulties which must be surmounted by the enterprise. The political situation in the Soviet republics considerably slows down the functioning of these enterprises. Strikes, notably in Armenia and Moldavia, where most of the suppliers of KVANT are located, impedes not only the production but the distribution of merchandise and their transportation to Novgorod. Only foreign enterprises are today capable of honoring the deadlines foreseen in their contracts. It has become more advantageous to supply oneself through foreign countries (notably Singapore), in hard currency, than to try to do so through channels in the USSR, where one must take into account the greasing of palms and an uncertainty with regard to the date of delivery. KVANT decided in 1989 to follow the route of good management, radically changing its politics of purchasing, refusing to participate in official fairs which would gather together all the enterprises tied to its ministry, independently closing

⁴⁸Transcription of interview, op.cit. pp.13-17.

bilateral contracts with only those suppliers with whom it chose to do business, and opening fourteen points of purchase spread out through the entire Soviet territory.

As for the selling of finished products, the situation is completely opposite. Rather than throwing himself upon the foreign market and finding himself in a position of unfavorable competition, Alexander Tsvetkov preferred to position his developmental politics in the interior market of expansion, in the privatization of his enterprise, and in the improvement of the work conditions of his personnel.

In the fall of 1990, at which time many of the defense directors were putting pressure on Prime Minister Nikolai Ryzhkov to abandon his reform politics, the KVANT enterprise was starting to put together the necessary documents for its own privatization. The directors were creating reserve funds to be used for the purchasing of capital, of buildings and of the materials for the enterprise. They issued three million rubles in shares (of 200, 500, and 1000 rubles) and succeeded in selling 700,000 of these to their personnel before the government of Valentin Pavlov should forbid the privatization of military enterprises.⁴⁹

One year later, in the fall of 1991, after the minister Vladimir Shimko was dismissed for having supported the putsch, Alexander Tsetkov did not hide his impatience to see a signed copy of the last ministerial decree for his own liquidation: We are passing

⁴⁹Transcription of interview, p.8 and Protocol No.14 of April 2, 1990.

thus under the jurisdiction of the RSFSR which never ratified the treaty of the President which forbade the privatization of defense enterprises. We have already passed an agreement with our bank--of which we are the founders--to obtain an advantageous credit rating with 12% interest instead of 18%," explains Alexander Tsvetkov.⁵⁰

The social politics of the enterprise was already seeing an interest by the personnel in buying out the factory and in a sharing of benefits. As is the case with many of the enterprises in the military-industrial complex, salaries for the workers had always been higher there than elsewhere. In terms of work, technical levels being equal, a technician earns 1000 more rubles a month at KVANT (bonuses included) than he would working in any other enterprise in the region (oblast'). On top of that, the enterprise ran its own variety theater where only employees of KVANT and their family members could attend. Above all, the factory could allow itself the use of two dental clinics which had been bought overseas (at the price of \$40,000.00 each) and of an integrated medical service replete with a stock of medicine brought over from Germany.⁵¹

Above and beyond the liberal management of his enterprise, Alexander Tsvetkov liked to play a political role in his country. Outside his mandate as deputy to the soviet of his oblast, he took an active role in the political events which shook the Soviet Union

⁵⁰Transcription of interview op. cit. p. 20.

⁵¹Transcription of interview of a KVANT employee, September 9, 1991, p.46.

in 1991. But he did so in his own way: he admits today that he had secretly sent to Kasimira Pruskiene, the Prime Minister of Lithuania, a tank of diesel while, in the meantime, the country was in a state of siege. He also admits to having sent 186 men to the barricades in front of the White House during the coup d'etat last August--186 former paratroopers, all employed by his firm and all suspected by the local KGB to be armed.⁵²

⁵²Idem, p.6. Already in 1956, Alexander Tsvetkov, then a student at the Institute of Communications "Bonch-Bruevich" in Leningrad, had taken part in the strikes which would shake the institute and the University on the island of Vassilyevsky.

3. AFTER THE COUP D'ETAT.

Hopes of some and fears of others: it no longer matters today to know who, among the directors, played an active role in the coup, or passively supported it, or showed--in time--his "democratic" spirit. What matters are the consequences of this weak, failed coup d'etat upon the power structure and upon the psychology of the defense managers.

If the coup d'etat had actually brought about the downfall of the power structures, it is important to note that these structures had already undergone a transformation during many months beforehand. The political departments had been closed for eighteen months since the announcement in February, 1990, of the abolition of Article 6 of the Soviet Constitution which stipulated the governing role of the Communist Party. As for the politics of conversion started last year by the government, it had placed the VPK ministers in an uncomfortable position and had contributed to the deterioration of the vertical ties which unified them with the enterprises.⁵³

The mentalities, on the other hand, changed considerably during those three days. The debate which shook the partisans of an accelerated conversion with those of a more prudent approach quickly ended. All today follow the line of the new government and proclaim themselves to be "democrats" or "reformers". Communism, as

⁵³Alexander Tsvetkov, the general director of KVANT, complains about the fact that his relationship with his Ministry was merely unidirectional: I inform my minister of our latest innovations, but I receive no help from his part in supplying us with the necessary materials and electronic elements.", Interview, p6.

a method of management, definitely died in August, 1991, taking with it in its fall from grace all of the ideology of the old guard who had been against reform.

The first sign of change is the attraction towards money that developed among most of the managers. The opening of politics toward the West was reinforced after the coup, and the contacts between the directors were multiplied. All of the defense industry directors have today become potential clients for overseas investors. All are, in fact, in search of financial partners who would be willing to invest in newly created satellite enterprises and who would oversee the continuing education of their employees, most notably in the domain of a comprehension of a free market--i.e. courses in marketing, management techniques, and international finance.

The second evolution which developed amidst the defense industry managers concerned their political attitudes. If before the coup d'etat there had been a diversity concerning their points of view and their appreciation of reforms, we note today a larger unity in their sworn objectives that can be classed under three headings:

3.1 The maintenance of a central power.

For all of the defense directors, the center had always been synonymous with stability. The decision-making processes were to this end rigid and hierarchical, that only the central power had at its disposal a global view on the production of an industrial

sector and followed the evolution of the manufacturing of the elements which were involved in a single contract.

The multiplication of declarations of independence had an immediate and dire effect: in closing their borders and by adopting specific laws, the now sovereign republics literally closed down the production of certain factories. The military-industrial complex is paying today for its monopolistic politics which had given it its force during previous decades. Nearly 300 factories, spread out over the entire Soviet territory, took part in the manufacturing of a single product (be it a missile or a simple automobile). The break in a single link of this chain wrought havoc upon the smooth operation of the entire machine. In Novgorod and in Kharkov, the KVANT and Kommunar enterprises both realize that their production of television sets depends today upon a single Armenian factory which furnishes the monopoly with the manufacturing of a single electronic piece: this factory, on strike for several months, had discontinued the distribution of this piece and put into peril the survival of ten or so different enterprises in the USSR, which in turn threatens to displace millions of factory workers into a technical unemployment.⁵⁴

The dissolving of the central powers evidently caused much chaos at the core of the defense industries. The situation was at such a catastrophic point that, on September 16, 1991, the directors of the largest enterprises had decided to invite to Kiev the presidents of the parliaments and academies of all of the repub-

⁵⁴Interview with Alexander Asmolov (Kommunar), p.43.

lics. Their idea was to make them understand the situation and to try to examine a new customs arrangement which could facilitate the functioning of the defense enterprises. It was decided that an All-Union Council for Science would be created, capable of coordinating the needs of the different republics in scientific matters.⁵⁵

Above and beyond purely ideological reasons, the rejection of the Russian cause can be explained most notably by the fact that Russia did not possess an information structure sufficiently developed to cover the ensemble of industrial sectors. The 80% of the defense enterprises located on the Russian territory were not sufficient enough to deal with the difficulties inherent to the industrial monopolies of the other republics (notably in Kazakhstan and the Ukraine). Deprived of information essential for the management of State contracts, Russia was not in a good position to take over the central structure where it had been left off.

Meanwhile, a few months before their final collapse, the ministers had the time to create their own associations, associations which could intervene according to the needs for information or supplies.⁵⁶ In this way, the Ministry of Radio Industry is one of the founders of the "Mars" association which regroups about one

⁵⁵Interview with Vladimir Seminozhenko, director of the Institute for Single Crystals, Kharkov, September 18, 1991, p.18.

⁵⁶GUK (Glavnoe Upravlenie Komplektatsii) and GMTS (Glavnoe Upravlenie Material'no-Tekhnicheskogo Snabzheniya) are two private enterprises (maloe predpriyatie) created within the Ministry of Radio Industry in the prospects of having to deal with deficiencies in the system. The two are in charge of supplying the enterprises of their sectors with electronic parts which are necessary for the final completion of their products.

hundred of these enterprises of the same industrial branch. Up until the time of the coup d'etat in August, 1991, this association functioned like an executive structure which was very much tied to the Ministry. As soon as it had become closed, the association tried to create a lending bank to deal with the state of production of the different enterprises in the sector, a bank whose doors would be open to all of the manufacturers of electronic parts within the Union.⁵⁷

In the summer of 1991, the political heads of the military-industrial complex were rushing themselves to develop parallel types of structures to replace the ministries.⁵⁸ All of the ministries which were forbidden after the coup d'etat had already been "recreated"--or were in the process of doing so--by that which the military directors were calling "corporations". This consisted of a new institution, a "platform" which would act like a legal person (iuridicheskoe litso), and which would have at its disposal its own budget capable of managing the contracts (zakazy) and the supplies (snabzhenie) of the enterprises within its own sector.

⁵⁷Which was placed, nevertheless, under the guidance of the Ministry of Electronic Industry. Transcription of interview with Yuri Danilov, Commercial Director of KVANT, Novgorod, September 9, 1991, pp.23-25.

⁵⁸In Sverdlovsk, for example, the directors had decided to take the initiative to create an aid fund for the conversion of Ural enterprises without having waited for the go ahead from the government. In Perm, the decision was taken to orient the production of the military factories with regard to the needs of the oblast. The first step was to unite, under a single roof, all the stocks of many factories having the same production, which also liberated precious space within the factories themselves. Rossiiskie Vesti No.21/October, 1991.

The Ministry of General Machine Building thus had the time to create several corporations before its liquidation.⁵⁹ All of these corporations function on a territorial basis: there exists a Moscow corporation, a Russian one, a Ukrainian one... Each of these unite fifty or so enterprises which are linked to the same sector in an attempt to elaborate their similar politics.⁶⁰ The corporations are, notably, in charge of overseeing the proper functioning of each enterprise, of the distribution of parts, and of the manufacturing and success of the finished product. To do this, they introduced a hierarchical discipline which surprisingly resembles the relationships between enterprises and ministries: it was even decided upon at a political level which the military representatives would have maintained and would have assured the liaison between the corporation and the enterprise.⁶¹

From the first aboard, the old structures of decision making were thus maintained (we know, for example, that the Russian corporation dependant upon Minobshchemash opened a department there within). There is however an essential difference between these new

⁵⁹The creation of corporations had been foreseen well before the coup d'etat in August and was part of the plan to replace the ministerial structures. While the Ukrainian corporation was started on September 9, 1991, the Russian corporation had been open since July.

⁶⁰In the Ukraine, the corporation to which Alexander Asmolov is tied unites sixty enterprises. The majority of these are industrial enterprises who formerly were dependent upon the Ministry of General Mechanical Construction. Another part are the industrial chemical enterprises, while still others specialize in para-medical supplies. Interview with A. Asmolov, p.45.

⁶¹Transcription of interview with Leonid Ivashov, op.cit., p2.

corporations and the former ministries: the corporations are managed by a small council composed of 13 to 15 military factory directors who belong to the same sector⁶². None of these directors has ever filled an official functionary position in any ministry. A new generation of managers had thus proclaimed themselves, creating a new elite, and handing over more power to the enterprises: in any case, they are today authorized to name the beneficiaries of a contract and to impose their own rhythm of production.

The second reservation one can have with regard to these new corporations is that they are multiplied by the number of republics and by the number of large military-industrial centers which exist in the USSR. They have thus formed a new bureaucracy, even harder to manage and especially even harder to coordinate from a federal level. A taste for power has driven these defense managers towards a quasi-insoluble paradox: though they fight for the maintaining of the Union and the free circulation between republics, the dislocation of the Union which followed the coup d'etat in August has forced them to react in a framework defined by the republics. They will certainly obtain more and more power locally and at the level of the republics, but they will inevitably lose their monopoly of production on a federal level.

3.2 Development of Local Structures.

If the economic liberalization and the change in structures

⁶²Exactly 14 in St. Petersburg and 13 in the Ukraine. Interview with Alexander Asmolov, director of Kommunar, Kharkov, September 20, 1991, pp.30-33.

was foreseen well before the coup d'etat of August 1991; the directors of the military-industrial complex had nevertheless taken advantage of the crumbling of the national structures to make a profit for the capital of their enterprises.

On July 9, 1991, Boris Yeltsin signed an authorization transforming the Novgorod oblast' into a free economic zone. The Council of Ministers having ratified the text, the transformation was to have been put into effect on September 9th. This was to be a formidable force to fight against the monopolies and to effectively develop a commercial resource within the local plan.

The statute of the zone frankly avoided, in effect, the declaration to central authorities of merchandise licensing of products in the zone: thus nothing was now forbidden for the industries in terms of supplying themselves with raw materials in the immediate vicinity and of forgetting the ties which obliged them to make contracts with the monopolistic enterprises which were tied to their ministries. Alexander Tsvetkov, Director of the KVANT military enterprise, illustrates this bias with an example: "We have problems with supplying ourselves with flammable polyurethane. The only official producer is in Omsk in Siberia, and he is suffering from the lack of raw materials. I know an enterprise based in our region (oblast') which would accept to sell us another sort of polyurethane. But, the Union of Chemical Export (Soyuzkhimeksport) refuses to allow us this purchase, which has frozen our contract for more than six months. Consequently, our production is

regularly stopped by the mere fact that we do not have any".⁶³

The "development of horizontal structures" is often translated through a system of bartering: "In Vilnius, one of our principle suppliers of electronic parts had warned us that they were stopping all production because of a lack of copper wire", Alexander Tsvetkov continues. "We are called to a meeting next week. What's going to happen? They will deliver to us our contract only if we can find them 60 tons of copper wire".

3.3. Diversification of activities.

The directors of the military factories have evolved, simultaneously, into a double movement. At the same time that they are trying to maintain the former decision-making structures, the tendency for them, paradoxically, is toward the destruction of the structures holding together the enterprise. Since the beginning of 1970, the government had encouraged the associations of enterprises to conglomerate production (proizvodstvennie ob'edineniya).⁶⁴

The size of these conglomerates was often equivalent to the amount of influence they had with the ministries. Since 1988 and the Law on Enterprises, this tendency reversed itself: those enterprises which formed these immense conglomerates had made an appren-

⁶³Transcription of interview with Alexander Tsvetkov (KVANT-Novgorod), op.cit., pp.21-22 and the Statute of the free zone "Sadko" ratified on July 9, 1991, act No.1588-1, articles 2, 6, 10, 21, 26.

⁶⁴Gorlin, Alice C., "Industrial Reorganization: The Associations," in US Congress, Joint Economic Committee, Soviet Economy in a New Perspective, Washington, D.C., U.S. Government Printing Office, 1976, pp. 162-88.

ticeship of their own autonomy. This allowed for a more supple management, defining by itself its own relationships with suppliers and with clients (and for the most part this meant the State), establishing their plans from the perspective of sales rather than from the objectives decided by the administration.⁶⁵ The enterprises had to decide as well upon their investments which no longer came from the State but from their own resources or from bank credits. The banking system consequently changed in nature and in function: along side of the central bank (Gosbank), several commercial banks were flourishing over the entire Union territory.

Little by little, all of the forms of the management of an enterprise were being realized. Independent satellite enterprises were created, most often those which were based inside State enterprises. The military enterprises were no exception to this rule: private enterprises were multiplied, the choice of a joint-venture statute between enterprises within the same sector--cooperative or simply "small enterprises" (maloe predpriatie)--was nothing more than a choice of fiscal politics. From a legal point of view, all of these organizational forms share one basic feature: they create an entity that is defined by a distinct legal person (iuridicheskoe litso) who has the right to act independently and, most importantly to the production-level managers, to enter into contracts.⁶⁶ By the spring of 1991, many cooperatives and diverse

⁶⁵The law on State enterprises was adopted by the plenum of June 1987, but wasn't put into effect until January 1st, 1988.

⁶⁶Buroway Michael and Hendley Kathryn, 'A Soviet Enterprise Under Perestroika and Privatization', op.cit., p.18.

enterprises were flourishing in the USSR as well as banks and stock exchanges, all with one single mission in mind: to accumulate, in a minimal amount of time, a maximal capital in preparation for the next privatizations. The satellite "small enterprises" have an immense advantage in terms of their supply structures. Authorized in August, 1990, by the Council of Ministers of the USSR, they can become a constituent part of the State enterprise and are registered within only two weeks.⁶⁷ Exonerated from taxes during their first two years of existence, they were all too soon considered as a means of raising capital for the enterprise. The production which was started by these private enterprises is often the same production as that of its "mother company", and it is done by means of the "mother company"'s equipment. The employees are often the same as those of the "mother company", but receive in this way a salary which is close to triple of that which they received working for the "mother company .

Ensconced in a terrible economy, the management of the private enterprise concerns itself mostly with transactions that are made outside the production sector (supplying raw materials, research of new markets and of new methods of distribution) which, in fact, naturally benefit the "mother enterprise". The private enterprise is entitled to sell goods at prices which are agreed upon by the parties involved, i .e. "contractual" (dogovornye) prices rather than those which are set by the State Committee on Prices (Goskomi-

⁶⁷Article 5 of the decree concerning small enterprises.

sen), i.e. "state" (gosudarstvennye) prices.⁶⁸ The original cooperative law put no limits on wage payments. By paying high enough wages, a cooperative could reduce its profits and hence its taxes to almost zero, as wages are considered a cost of production which are deductible from the gross income when determining profits.

In fact, the augmentation of these satellite enterprises has fixed the problems inherent to deficient ministries, ministries who were incapable of properly managing the conversion politics started in 19⁸⁹. In the meeting of the First Congress of People's Deputies, they were speaking about 555 enterprises to be converted, then of 422. At the end of 1990, the Soviet press explained that only six or seven of these enterprises had actually been converted.⁶⁹ The hesitations toward conversion can be easily understood. The drastic reduction of military contracts had effectively contributed to the freeing up of space, of material and of personnel. But the investment policies aimed at helping in the transition period, at the governmental level, were much too feeble.

From the point of view of the enterprise, it is not profitable today to invest--either in the training of the workforce (pereobuchenie) or in new equipment--in light of a conversion of production. Such a reform does not permit a separation from the ministry: once "restructured" and "converted," the enterprise remains, as it had been before, dependent upon this monstrous machine, especi-

⁶⁸Burroway and Hendley, "A Soviet Enterprise Under Perestroika and Privatization", op.cit., p.20.

⁶⁹Komsomolskaya Pravda, November 29, 1990.

ally with regard to State contracts, supplies, management of stocks, etc. It is better to increase the number of satellites and accumulate a capital which would serve as reserve base: the "mother enterprise" generally holds between 50 to 60% of the initial capital, and the private enterprise receives, in return, its parts of the benefits in the same proportions.

Thus, in Kharkov, the Institute for Monocrystals, specializing in optics, makes detectors which are then used in the nuclear domain and in the aeronautic and space industries. The reduction of military budgets created a reduction of military production from 80% to 20% in three years. Its director, Vladimir Seminozhenko, does not hide the fact that he would like to see the augmentation of military contracts: 'These are the only contracts which are profitable', he explains. Forced to govern under these conditions of conversion, Vladimir Seminozhenko has himself taken the side of encouraging the creation of satellite enterprises. He brags today of having been at the origin of ten or so enterprises of different statutes created in such a way: from the stock company to the independent "leased enterprise" (arendnoe predprivatie).⁷⁰ They are already functioning in top form, which permits him to develop new products which the Ministry wouldn't necessarily encourage, like colorants and non-oxidizing paints, both of which are in large

⁷⁰The "leasing" arrangement (*arenda*) means that the enterprise must pay a rent to the Institute of Single Crystals for the use of the fixed assets of the factory. At the same time, they will continue to fulfill the state orders as long as the Institute of Monocrystals supplies the necessary raw materials.

deficits in the Soviet marketplace.⁷¹

The Soviet managers are fully conscious of the difference in the level of management which separate them from the West. They are completely ignorant with regard to the basic structure of commercial business: production methods, advertising and distribution, financial arrangements, funding of research and development, dealing with demanding customers. What they seek foremost from their foreign partners would be a training of their employees in these matters.

At the level of the enterprise, the lack of management abilities slows down all economic reform. For example, the accounting system does not distinguish between recurring costs of production and general administrative expenses. Thus, the companies are not able to establish figures for the amounts of raw materials in stock, and it is impossible for them to identify the recurring cost of production. As the concept of time is still not taken into account by the management, business is seen as risk free: there are no provisions made for the possibility of future debts.

The first company of military-industrial investments was created in September of 1991 in Moscow, initiated by the Russian firm to exchange merchandise and raw materials. Its base capital is one million rubles, and each stock is sold for 100,000 rubles. The stated goal of the company is to accumulate a sufficient enough capital to finance the development of new structures within the

⁷¹Interview with Vladimir Seminozhenko, director of the Institute for Single Crystals, September 18, 1991, Kharkov, pp.13-18.

military-industrial sector, which means, in other words, the creation of a commercial resource of lending banks, commercial military-industrial banks, a specialized insurance company, and a commerce center which would be open to foreigners.⁷² "We have made it our goal to educate the military in matters concerning a market economy: to invest today in the military sector is extremely profitable. We had to take our marks, to be ready to invest in the military-industrial sector, as soon as we are authorized to do so. We are convinced that we will not be waiting for long," explains Dmitri SEuhinenko, co-chairman of the Russian Raw Materials Stock Exchange Company.

⁷²Interview with Dmitri Suhinenko, co-chairman of the company, Moscow, October 9, 1991 and advertising in Izvestia, September 31, 1991, p5.

4. CONCLUSION

The defense directors were able to turn around the policies of conversion and institutional restructuring to the advantage of their own needs. Politics of consensus enabled them to have enough time to put the new structures in place and to secure each individual conversion. The political climate which marks the beginning of this decade in the USSR could give rise to disastrous consequences with regard to the unity of the group. A situation never before seen in the Soviet Union has shown its face: a spirit of resourcefulness and individualism.

More than the maintenance of the former structures, the priorities of the defense managers lie in the accumulation of capital. In fact, we are witnessing the awakening of a class, one purged of its maladjusted elements. It is clear that the directors are united by a single will to make themselves an attack force, to take part in a movement that will go from the bottom to the top--in other words, to impose new rules of decision-making. If this tendency is confirmed, it could be possible for the associations of managers to become defenders of their own interests, almost as if they were Western lobbyists.⁷³ In the general stampede that marks the history of perestroika, only collective decision can help to keep collective heads above water.

The process is not without risk with regard to the democratization of the State structures. The Russian parliament has under-

⁷³Already, some defense directors boast of having been able to convince several deputies in varying parliaments to defend their own interests.

stood this and have decided to put an end to the monopolies of the defense directors. On October 11, 1991, the Council of Nationalities of the Russian Federation Supreme Soviet adopted the decree "On the regulation of institutions and activities of the producers associations, kontserny, corporations and other holdings on the Russian Federation territory". The decree cracks down on the newly emerged economic structures that perpetuate the monopolistic powers of the allegedly defunct ministries. The document removes state property rights from large associations, corporations and the like, demanding that the limited amount of state property should be administered by the government agencies, and that the assets that are now governed by quasi-ministries should become a part of private markets.⁷⁴

With such an array of forces against them in the political world, many of the defense managers believe the war is lost before it starts. Lost, unless Russia won't escape the military vision that has always been its own, unless the "democrats" won't succeed in gaining ascendance over the defense holdings... The struggle for power is not over yet in the USSR.

⁷⁴In October of 1991, the Russian Council of ministers had already authorized the creation of more than 30 of these associations and corporations. Decree of the Council of Nationalities of the Russian Federation Supreme Soviet, pl, and Kommersant N'41/October, 1991.

Table 3.1 Republican shares of total defence complex employment
(per cent total industrial-production personnel, 1985).

RSFSR	71.2	Kirgiziya	0.6
Ukraine	17.5	Georgia	0.5
Belorussia	3.2	Azerbaidzhan	0.4
Kazakhstan	1.7	Moldavia	0.4
Uzbekistan	1.4	Tadzhikistan	0.3
Armenia	1.0	Estonia	0.1
Latvia	0.8	Turkmenistan	0.1
Lithuania	0.8		

Source: Julian COOPER, Conference in Paris, May 23-25, 1991

Table 3.2 Regions with high proportions of defence complex employment
(per cent of total industrial-production personnel).

1. Udmurtiya	11. Bryansk obl.
2. Nikolaev obl.	12. Dagestan (ASSR)
3. Kaluga obl.	13. Leningrad (city)
4. Mari (ASSR)	14. Ural'sk (Kazakhstan)
5. N.Kazakhstan obl.	15. Samara (Kuibyshev) obl.
6. Omsk obl.	16. Ulyanovsk obl.
7. Voronezh obl.	17. Tula obl.
8. Novgorod obl.	18. N.Ossetia (ASSR)
9. Perm' obl.	19. Tambov obl.
10. Vladimir obl.	20. Gor'kii obl.

Source: Julian COOPER, Conference in Paris, May 23-25, 1991

Table 3.3 Regions by absolute number of defence complex personnel.

1. Sverdlovsk obl.	11. Khar'kov obl.
2. Leningrad (city)	12. Chelyabinsk obl.
3. Moscow (city)	13. Baskiriya
4. Gork'kii obl.	14. Vladimir obl.
5. Moscow obl.	15. Lugansk obl.
6. Perm' obl.	16. Voronezh obl.
7. Samara (Kuibyshev) obl.	17. Tula obl.
8. Novosibirsk obl.	18. Dnepropetrovsk obl.
9. Tatarstan	19. Saratov obl.
10. Udmurtiya	20. Kiev obl.

Source: Julian COOPER, Conference in Paris, May 23-25, 1991

PART IV. CONVERSION AMID DISINTEGRATION.

This part deals with unraveling of the conversion program in 1991, as the Soviet Union itself started to fall apart.

1. SUMMARY OF DEVELOPMENTS BEFORE THE COUP.

1.1 The fight over conversion intensifies.

Soviet leadership is feverishly searching for the ways to forestall the economic crash. Resources of the military-industrial complex represent the last available reserve. Conversion of defense industry to civilian production was the only policy mentioned by Gorbachev as a counter to the economic downslide at the March meeting with official economists. He referred to the increasing importance of conversion, and the need to speed it up.¹

On the other hand, opposition to conversion from the military and their supporters is getting increasingly shrill. Thus, popular TV personality Alexander Nevzorov stated in his show "600 seconds" that Gorbachev should be prosecuted for high treason because of his conversion program.²

This attack on conversion should be understood in the context of the general outlook of conservative forces, as articulated by the Minister of Defense D. Iazov in a February interview. Soviet strategic position recently suffered a number of severe setbacks:

¹"Ekonomike ...", 1991.

²Personal communication from a Soviet TV viewer.

arms limitation treaties that amount to unilateral concessions; balance of forces tilting in favor of the West after the break up of Warsaw pact; former allies scrambling to join NATO. (The Minister denied that the lessons of Desert Storm present yet another cause for worry.) While there is no immediate threat of war, the country's position 15-20 years from now is endangered by these developments. Accordingly, the Minister is worried by the long-run effects of conversion. More than 2 bill. rubles of cutbacks in expenditures on R&D disrupts the continuity of development of new generations of weapons, and is especially dangerous on the background of intensive US efforts in the framework of SDI. Another concern is reversibility of conversion. While the armed forces can get by for 3-4 years without buying new tanks, by the time the tanks are needed, the workers have left and the plant has been retooled.

1.2 Republican separatism.

While the future of conversion is being contested within the top Soviet leadership, ongoing processes in the economy may have more impact on the shape of defense sector than any plans or programs.

The military-industrial complex attempts to preserve defense industry as a tightly centralized, state owned sector. The disintegration of the Union is the most immediate obstacle to this attempt. This disintegration is not limited to the highly publicized drive for independence of a half dozen tiny peripheral repub-

lics. Republics that are not demanding independence, and may be headed by communists (Kazakhstan, Uzbekistan, Russia, Ukraine) are expanding their economic authority into the areas previously reserved for the center. This is important for conversion, because, in contrast to the Union, individual republics are not aspiring to the superpower status. Therefore, if and when the republics gain authority over the defense industry plants, they will not be concerned with reversibility of their conversion. The republics will be serious about transferring the resources of these plants to civilian uses.

The conflict between the Union and the the republics is very visible with respect to the land used by the military. The latest draft of the Union treaty designates republics as owners of land.³ They are now passing land use laws that would charge the military for the land they hold. While concessions and preferences are envisioned for some categories of users, the military will be charged the full amount.⁴ Late in 1990, the Supreme Soviet of Kazakh republic (home of Semipalatinsk nuclear test site and Baikonur space center) passed the law prohibiting tests of nuclear and other weapons of mass destruction on its territory. It is not clear how this law will be enforced. At least with respect to the nuclear testing, the republic authorities are enjoying strong support of the local population, concerned with health and environmental

³"Dogovor o Soiuze suverennykh respublik", Pravda, March 9, 1991.

⁴Ancheev and Sil'vanovich, 1991.

effects. The republic is also pressing for negotiations on the military's rights to use land in the republic.⁵

This conflict is now spreading to the defense industry. The Supreme Soviet of Russian republic decreed to start wrestling control over the Union enterprises away from the Union ministries. On Jan. 22, 1991, Russian Prime Minister I. Silaev signed a decree "On approving the procedure for transfer of the Union enterprises and organizations in Russian republic under the jurisdiction of the Russian government." The transfer of some Union enterprises to republics has been going on at the initiative of the Union government. Yet this document is open with respect to the enterprises that should be transferred, and can be interpreted as applying to all enterprises, including defense industry. The transfer is effected by the decision of the general meeting of the employees of Union enterprise. (This procedure has no ground in the existing Soviet law.)⁶ In order to entice the Union enterprises to change their allegiance, republics offer inducements, such as lower taxes, financing and supplies for construction.⁷ B. N. Ieltsin has been enticing a major defense industry plant "Kirovskii zavod" in Leningrad to switch to Russian republic subordination by promising to turn it into an employee owned entity, allowing it to keep a larger part of hard currency earnings, as well as by tax concessions.⁸

⁵"Proshchai ...", 1991.

⁶Komarov, 1991.

⁷Lavrentiev, 1990.

⁸Ovcharenko and Shirokov, 1991.

Managers of large military enterprises publicly protested the Russian republic decree. They were claiming that subordination of the military industry to republican governments will destroy the present intricate supply system, on which their enterprises depend.⁹

The Union government, faced with this onslaught from republics, itself offers unprecedented concessions. The latest draft of the Union treaty states that the Union government should direct military industry only in creation and production of military goods. The implication is that the republics can direct civilian production of the military plants in their territory. If this draft gets adopted, it will be used by the local authorities to get their foot in the door of the military industry, so as to extract more resources for local needs.

1.3 Economic breakdown.

Another process that has a strong effect on the defense industry is the disintegration of the centralized supply system. We have not encountered any concrete examples of defense production being disrupted by supply problems. Yet the disruptions are undoubtedly taking place, and increasing in magnitude. This can be deduced from the troubles with supplies for the Rear of the Soviet armed forces. (This apparently does not include weapons.) Out of 60 types of medical supplies necessary for the armed forces, only 10 were included in the state order. The armed forces have to

⁹"O 'kazennom' ...", 1991.

contract for the rest directly with producers. There are numerous cases of producers turning down the orders of the Ministry of Defense. In one instance, the army's orders for uniforms and boots totaling 250 mill. rubles were turned down. Thousands of tons of fuel were contracted for, but not supplied in 1990. In the beginning of 1991, only 70% of supply contracts for the Rear were concluded, because of the suppliers' reluctance. Armed forces also suffer from price increases. Contract price of one meter of fabric for field uniforms rose almost four-fold, from 2.75 rubles in 1990 to 10.50 in 1991. Many producers demand from the Ministry of Defense scarce goods, such as construction materials and trucks, sending over soldiers to perform work, as a condition for supplying the goods. There are also demands for payment in hard currency.¹⁰

One result of republics charging the military for the use of land, and of suppliers raising prices is that hidden costs of the military become monetized, there for everyone to see. There is likely to be psychological effect when (visible) costs of the military keep escalating, despite the reductions in the force level. This may provide additional reasons for cutting the size of the force.

¹⁰"Ekonomika ...", 1991.

2. CONVERSION AFTER THE COUP.

2.1 Medium run forecast of the course of conversion.

2.1.1 Why republics will dismantle the military industry.

Republican governments do not think of their nations as great powers. There is no reason for them to spend resources on the military industry designed to support great power policies. Russian and some other republican governments are either popularly elected or on the verge of so being. They are therefore attentive to the wants of the voters. In the face of the rapidly deteriorating economy, republican governments are seeking resources with which to cushion the decline in living standards. The military industry is practically the only domestic sector left that can be plundered for the sake of the consumer. Republics are concerned with economic survival and do not care about reversibility. Dividing military industry among the republics fragments the hitherto unified sector (though, of course, one republic, Russia, holds on to about 80% of the total). The chances of reestablishing effective interrepublican coordination for this sector are very slim. (They are slim for any sector, for that matter. Disintegration is likely to continue.)

2.1.2 Expected results.

If our views of the intentions of republican governments and of continued economic decline through 1992 are correct, than the following events should happen in the near future:

- A sharp (e. g., 90%) reduction in military production and R&D within 2-3 years, coupled with a reduction in subsidies to the sector. This will be a dismantling process, rather than conversion.
- A shutdown or conversion of whole plants, rather than parts of plants, as has been the case in 1989-91.
- A transfer of all civilian production from the military to civilian sector of the economy. This will include the newly converted plants, civilian plants that were considered part of the military sector in the past, and civilian divisions of military plants that are technologically and territorially separable.
- A transfer of plants that produce dual use products to the civilian sector. This would leave only final assembly plants in the military sector.
- Dismantling of much of the VPK administrative superstructure (the military machine-building ministries, the military department of Gosplan), leaving perhaps a single ministry of armaments in Russia.
- The mothballing of the military production capacity will be kept to a minimum. Production capacities that cannot be converted to competitive civilian production will be scrapped or abandoned.
- A dismantling of the industrial mobilization system in the civilian sector, or at least of its costlier features (so called second departments, restrictions on product design, etc.).
- Reduction in secrecy surrounding military budgets, procurement, and production to the levels common in Western parliamentary democracies.

2.1.3 Factors that can slow down or reverse the dismantling of military industry.

It is in the interest of the 11 million people working in the military industry to keep their factories running. In a democratic country, these people can form a formidable lobby that the government may try to mollify with subsidies. There is also an ideology that paints this special interest as coinciding with the long-run interests of the society. It is often argued that the unique concentration of scientific, engineering, and managerial skills in the military industry should be preserved as the most valuable asset of the society. It would guarantee technological progress in the rest of the economy.

In some regions of Russia, such as Udmurtia and parts of the Urals, up to 80% of all jobs are in the military industry. Sharp reduction in military expenditures may turn these regions into disaster areas. This, in turn, could lead to riots and other disturbances, forcing a policy reversal.

Russia will inherit all the central institutions of the Soviet VPK. These institutions, scaled down and renamed, will be staffed with the same old personnel. It is likely that old ways of dealing with military industry (e. g., pieces of the Program for conversion) will also reemerge out of inertia or for lack of alternative policies. While it appears unlikely at the present moment, prudence requires us to watch for signs of resurgent great power ideology in Russia. The turmoil of the coming transitional period may have all kinds of unpleasant effects on the political situation

there.

It will be economic crisis that forces republics to divert resources from military uses. Massive foreign aid alleviating the crisis would also blunt the incentive for cutting military expenditures. While one should be mindful of these potential brakes on the dismantling of the military industry, they do not appear to be strong enough to reverse the developments outlined in the previous section.

2.1.4 What the US government can do.

- Provide humanitarian/economic development aid narrowly targeted to the regions where military industry predominated (see item 3 in the previous section).
- Advise and educate politicians and government officials in charge of military industry on the general principles of conversion in market economy.
- Facilitate the flow of information to US businesses about investment opportunities in plants that severed their ties with the military industry.

2.2 Ambiguities of the transition period (September - November, 1991).

2.2.1 New faces in charge of the military industry and conversion.

During the coup, Russian president B. N. Ieltsin issued a decree "On the economic foundation of Russian sovereignty".

According to this decree, Russia assumes jurisdiction over all Union enterprises on its territory, including those in the military industry. Who is in charge of the sector now?

Union ministries for military industry still stand. But their ministers have resigned and it is generally understood that their days are numbered. The enterprises in the sector pay little attention to their ministries. In the an effort at self-preservation, ministries transform themselves into more market-sounding entities. Thus, Ministry of general machinebuilding became a concern "Rosobshchemash". Main administrations of the ministries in charge of particular subsectors consider leaving the ministries and becoming independent.

There is a Union committee in charge of running the economy. It is seen as a provisional body. The member of this committee in charge of military industry is Arkadii Vol'skii. Russian Vice Prime Minister Ievgenii Saburov is in charge of conversion in the republic.

The demise of the defense industry ministries means that the power of municipal and regional authorities over the enterprises in this sector greatly increases. The latter become active players in the process of conversion. This is especially true of localities with large concentrations of military industry, such as St. Petersburg, where 400,000 people are employed in this sector. St. Petersburg city authorities expect further deep (2-3 times) cuts in procurement of military hardware soon. The city intends to use production capacities and stockpiles of materials set aside according

to mobilization plan as a cushion for the economic dislocations of the coming winter.

2.2.2 Illusions about "business as usual" in the military industry.

It is reported that soon after the coup, directors of military-industrial plants tried to pressure A. Vol'skii for additional funds and resource allocations.¹¹ Vol'skii rejected these demands. In the past, he has favored a very gradual transition to market and privatization. In recent months, his views are said to have become much more radical, and closer to the position of the Russian government.

The latter suggests to start privatizing the defense industry plants immediately. However, it also envisions continued subsidies to these plants from the state budget for the next 1-1.5 years. After the subsidies will be discontinued, the plants will be free to abandon defense contracting entirely. This plan is rather optimistic: such a long period of subsidization will not be affordable for the Russian government.

Russian politicians are searching desperately for a scheme that would spare them the political risks of large layoffs in the military industry. One such amazing strategy has just been presented by Dr. Sergei Glaziev in a policy paper written for the Russian government.¹² Its main points can be summarized as

¹¹S. Razin, "VPK. ...", Komsomol'skaia pravda, Sept. 7, 1991.

¹²Dr. Glaziev is one of two or three brightest Russian economists of the younger (under 45) generation. He is active in consulting for the Russian parliament and government.

follows:

- Russia (or whatever is left of the Union) would join NATO;
- NATO countries would then buy Russian/Soviet military hardware for their armed forces;
- This will cushion the blow of declining Soviet procurement for the sector;
- NATO countries should hurry, since desperate Soviet weapons manufacturers are flooded with tempting orders from Asian and African countries in highly volatile regions.

2.2.3 Implications for the U.S. policies.

If and when the U.S. government makes an effort to promote conversion in the former USSR, it should deal as much as possible with the regional authorities in areas like Sverdlovsk, Izhevsk, and Leningrad, rather than the central government in Moscow. The former have a larger stake in successful conversion, are more knowledgeable, and may even carry a greater weight with the enterprises concerned, than the latter. The threat of selling arms to politically unstable regions will be used to blackmail the U.S. and other western nations into providing economic assistance. Informing the Soviets of the unacceptability of such blackmail may help direct their efforts towards more constructive work on conversion.

2.3 The transformation of the military industry's administrative apparatus.

2.3.1 Destruction of the old apparatus.

The administration of the military-industrial complex is totally disoriented and is falling apart. It faces the lack of an accepted military doctrine. Its top management is discredited: one of the members of the August junta, VPK chief Oleg Baklanov, is now in jail. It also suffers from the general political and economic crisis.

In the aftermath of August putsch, the Union cabinet of ministers was disbanded. The Russian government abolished the VPK and the Union defense industry ministries as of January 1, 1992. But even now the VPK and defense-industry ministries are not working. Their staff is demoralized.

2.3.2 Part of the apparatus survives.

Yeltsin's team is dominated by his cronies from Sverdlovsk, one of the largest centers of the military industry. Thus, acting prime minister of Russia Oleg Lobov was director of a defense industry plant and later chairman of the Sverdlovsk regional administration (oblispolkom). Iurii Petrov, Yeltsin's chief-of-staff (rumored to be the most influential of the President's advisors), is the former first secretary of the Sverdlovsk regional CPSU committee and ambassador to Cuba. These people do not intend to liquidate the VPK apparatus entirely, but rather to reproduce the customary forms of organization on a smaller scale.

The military industrial commission of the Russia's Council of ministers is being set up. Old Union defense industry ministries are being transformed into departments of the Russian Ministry of Industry. Of course, their size is being drastically reduced in the process. For example, the Ministry of Shipbuilding apparatus now has 1200 employees; the department of shipbuilding of the Russian Ministry of Industry will number only 120. It should be noted that the organization of the Russian military industry is not yet fully settled.

2.3.3 Efforts at self-preservation.

All the administrators in the military industry, and especially the top management, are concerned with their future employment. They are feverishly trying to use their remaining influence and connections to create all kinds of concerns, joint-stock companies, and other centralized structures, supplanting the old command-administrative bodies. Under the new, market-sounding names, these bodies are supposed to perform essentially the same central planning functions as the old ministries and main administrations. The top administrators of military industry become the presidents, vice presidents, and directors of these new bodies. They attracted the most to any activity involving hard currency earnings.

An example of such "entrepreneurship" is presented by the case of scrapped Navy vessels. Scrap metal is one of the few Soviet export commodities with relatively reliable markets. However, the capacity for collection and preparation of scrap is inadequate.

Retired Navy vessels cannot be cut into scrap. Instead, they have to be taken to the foreign buyer whole ("by the nostril", in professional argot). Scrap exported in this manner commands prices as low as \$1.00 per ton. If the ships were cut into pieces and sorted, prices would have been higher. This would have also made it possible to separate higher value non-ferrous metal and special alloy scrap.

The Soviet Navy is now decommissioning a large number of vessels, including nuclear and diesel submarines. Admiral Chernavin, commander of Soviet Navy, expects that about a quarter of the Navy will be retired in the near future. In September 1990, the Union government allowed navy shipbuilding and ship repair plants to export scrap and keep 30% of the hard currency proceeds. However, plants needed export licenses to proceed with the deals. A group of the military industry ministries' executives, who run these plants and decide on licensing scrap exports, created the Russian Association for Scrapping Ships (Rossudoorazdelka) to run and supervise the exporting of scrapped vessels. This centralized administrative body is headquartered in Moscow and employs 250 people. Creating jobs for a number of redundant VPK administrators is the only use of this organization. The only benefit for the plants in joining this association is that they are then given export licenses.

There are numerous similar instances of the VPK's adjustment to Russian government. "The power of VPK, of course, weakened, but did not disappear. It lingers on, because the military industrial

complex itself is still with us. And, honestly, we do not know how to get rid of it."¹³

2.4 The defense budget.

The increasing economic and political chaos in the Soviet Union today is paralyzing the management of the military-industrial complex and causing a sharp decrease in utilization of its production capacities. An important aspect of this process is the disintegration of the military budget. In the fall of 1991 it became clear that the state budget is in ruins and, because of that, sources of financing for defense expenditures are completely uncertain.

2.4.1 The end of the unified budget system.

The erosion of a single, unified budget system began in mid-1990, when Russia, Kazakhstan, the Ukraine and other republics passed laws giving them power over their own budgets. At the present time, three separate kinds of budgets exist *de facto*: union, republic, and local. The "state budget" used to combine all three levels. Now it has disappeared, for all practical purposes. The collapse of a unified budget system has assumed the form of a "war of the budgets."

In the wake of the center's desperate efforts and its concessions to the republics, the union budget for 1991 was passed in mid-January after the republics had signed an economic agreement.

¹³Izvestiia, Oct. 10, 1991.

In order to somehow contain the astronomical gap between expenditures and income, a number of tricks were invented: state capital investments were removed from the expenditure part of the budget, a "sales tax" was introduced, and so-called "extra-budgetary funds" were created, among them a "stabilization fund."

The economic agreement signed by the republics began to be violated even before the ink had a chance to dry. The failed coup struck a death blow to the center, thereby destroying the political basis for the formation of a union budget. In 1992 there will be no "union budget," in the traditional sense of the term. The republics assumed jurisdiction over almost all of the union property on their territory during the fifteen to twenty days following the coup. Thus, they claim the taxes levied on enterprises' profit for the republic-level budgets, yet leave the financing of many aspects of these enterprises (including the social aspects) to the union budget. The budget deficit is being financed is being carried out by hastening the production of money. The same quantity of paper money was printed in August of 1991 alone as for all of 1990.

Industrial production and the national income are decreasing. According to official statistics, these decreases in September alone amounted to 11% and 13%, respectively. Wages, however, experienced an overall increase of 46% for nine months of 1991, compared with the same period in 1990. According to a forecast made by the USSR Control Chamber, for the period of October-December 1991 the budget deficit will be twice as high as the sum of budget revenues and deposits into the extra-budgetary funds. "At this

point, the country's financial system is entering into a phase of definitive collapse," concludes Alexander Orlov, head of the Control Chamber.¹⁴

2.4.2 Attempts to shield military expenditures.

A seeming reduction in the military outlays in 1991 should have been made up by means of a union-wide stabilization fund.¹⁵ But the republics have refused to deposit money into this fund. It has received only 7 billion rubles, instead of the planned 25 billion. This entire fund was directed towards maintaining the defense sector -- but it amounts to much less than was promised to the defense sector. It is also much less than what is needed to maintain production capacities and level of employment. In the fall of 1991, the Ukraine, Kazakhstan, the Baltics, Georgia and Moldavia did not participate in the formation of the union budget and of the extra-budgetary funds. More than ninety percent of the budget therefore falls upon Russia. As a result, the defense expenditures of the former USSR are primarily being financed out of the Russian Republic's budget.

2.4.3 Defense expenditures in the fourth quarter of 1991 and in 1992.

Hopes for supplementary sources of budget revenue are unrealistic. All the efforts to reduce budget outlays come down to cur-

¹⁴Pravitel'stvennyi Vestnik, 43, 1991, p.4

¹⁵ As we noted in one of our previous memorandums.

tailing the defense spending. The leading government financial experts recommend to cut the defense budget in the final quarter of 1991 by 15-16%. This cut will hurt the defense industry. However, it is not expected to bring the sector to an abrupt halt. The following measures have been proposed:

- maintain defense complex financing at the level of the previous nine months -- i.e., substantially reduced;
- reduce the resources allocated for maintaining military personnel to a level commensurate with their current numbers (it is common knowledge that the draft in 1991 was significantly below the planned level, and less than in previous years);
- cancel planned military exercises;
- cut the personnel of the Defense Ministry administration, the military districts, the command of various branches of the service, as well as the number of military representatives at the production plants. In addition, it is recommended that the production of obsolete weapons systems be phased out.

Rumor has it that the new defense minister, Marshal Evgenii Shaposhnikov, is leaning towards retiring one third of the generals and senior officers who are over fifty years of age.

As of November 1991, the outline of the 1992 defense budget is not yet clear. The new budget must be constructed on the basis of the new defense doctrine of a "union of sovereign states". However, the absence of political agreement among the republics, the catastrophic state of their finances, and the continued lack of clarity in their economic relations all render impossible the for-

mation of an inter-republic defense budget.

The Soviet experts suggest that the new defense budget be based on the following premises:

- since the republics are organizing their own military forces, an agreement needs to be reached as quickly as possible regarding the transfer to the republics of their individual shares of defense expenses;
- the maintenance of strategic forces, the RDTE expenditures, the anti-SDI forces, the border troops and the military pension program should all remain part of the union budget.

The center's defense budget may therefore be reduced by 25-30%. Accordingly, budgetary expenses for defense will increase in the republics.

In drafting the 1992 defense budget, the center and the republics will have to include the expenditures on many human and material resources which were traditionally never taken into consideration. The military budget will soon include new categories of expenditures earmarked for resources which were once supplied to the defense complex gratuitously or at low prices. Military production, encompassing everything from boots all the way to missiles, is already much more expensive.

Given the present political reality in the Soviet Union, all of the problems relating to the survival of the defense complex - including that of the military budget - are in a state of suspension. There is no chance to preserve the defense potential of the former Soviet Union.

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APPENDIX A.

Viktor Smirnov, Literaturnaia gazeta, July 15, 1990.

CONVERSION

(Excerpts from a report).

Comrades! As you know, our plant, which was previously producing you know what, has switched to civilian production. Conversion is proceeding successfully. Its first results are promising. But the speedy transition to the new product, an electronic washing machine, is very difficult since it requires retooling, retraining, etc. Therefore, we decided to start with the transitional intermediate model. Our designers developed four different prototypes of this product, so that the best one can be chosen.

Prototype no. 16, developed by the group headed by the Hero of Socialist Labor Poponkin, performed excellently. It accepts unlimited amounts of linen, has four washing regimes, moves easily across rugged terrain, and makes 4-meter-wide gaps in minefields. The latter two characteristics can be viewed, in principle, as an important achievement of the designers, but they also make the product overly complicated. Among the drawbacks of this model we should mention is that it requires for its installation a three-room apartment, with the partitions knocked down. The barrel protrudes outside, so the window has to be remodeled. However, the model's mobility makes it easier to transport. Prospective buyers should value that characteristic.

The group headed by the chief designer academician Strelianyi achieved a significant success with their prototype no. 19.

Testing results show that the machine has a reliable computer, it can collect dirty linen around the residence, quickly heat the water, and choose the washing regime so as to spare the worn out clothes. It can also wash military overcoats, which will be appreciated by the families of servicemen.

However, the computer was, apparently, programmed in haste, and one of the prototypes no. 19, while heating water, shot down an airplane that was about to land. In order to avoid such accidents, the Director General has strictly forbidden washing clothes in machines of this type near airports. Air traffic controllers have been warned that all flights should be suspended when washing machines no. 19 are heating water.

One should note an important achievement of academician Strelianyi's group: our comrades developed a unitary shell; previously, shells of this caliber had to be armed in stages. In general, the work of this design bureau is promising.

Prototype no. 21, developed by the group headed by Tushkinson, winner of the State and Lenin prizes, is characterized by a high degree of autonomy. A nuclear reactor makes this washing machine completely independent from outside power supply, which is convenient for shepherds in the mountains and polar explorers.

Some problems were discovered during the tests, conducted at the various testing ranges. Thus, some of the models no. 21, without any command, banded together into battalions, regiments, and divisions, and redeployed into the territory of the German Democratic Republic, the Czechoslovak Socialist Republic, and other East

European states. In the process, most of the machines assumed exclusively defensive positions, which testifies to the progressive thinking of computer programmers in Tushkinson group. It is pleasant to note that, while deploying themselves, the machines washed the clothes belonging to the population of the friendly countries. Businessmen attending the Leipzig Fair were impressed by the advantages of this model, when a battalion of the machines accidentally wandered into the area.

Design bureau of Lieutenant General Vzyskatel'nykh was the most successful. Their prototype no. 23 has all the advantages of the other models. It also effectively dries the clothes, with 15% residual moisture, and subsequent pressing. In-built iron with a computer based on super-micron chip ensures pressing of lace frills on ladies' underwear, bow ties, and soldiers' undercollars. The machine purifies and recycles the water it uses, a feature to please the adherents of the Green movement. The placement of the warhead on the bottom tray of the machine is an interesting design feature, though the experts from the service sector consider it to be redundant.

It is noteworthy that when the machine is switched to the program "69", it opens access to the drum that has enough room for two adults and two children. The drum lowers the intensity of penetrating radiation by factor of 60. A sanitary complex and the store of high-calory food makes it possible to stay in the machine for 20 days. The machine's weight and high cost are among its drawbacks. There is little doubt it could have been at least six

tons lighter.

The workers of our plant are outraged that prototypes no. 23, which were sent to the Western firms for publicity and promotion, ended up in the Third World countries, and were used in the fratricidal conflict between Tania and Tantania. It should be noted that the prototype performed far better than Western weaponry, and, while being used, preserved its main characteristics: it washed the underwear of all the personnel of the warring armies. Thanks to this fact, during the victory parade, the troops of both sides looked fresh and efficient.

Currently, the experts are studying the test results, in order to design the final prototype. In a year, the machine will start selling in the "Light" retail stores. The buyers will be required to show a certificate from the local police department, references, military ID, and the invoice signed by the head of the General Staff. The machine will not be sold during the election campaigns.